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RECONSTRUCTION AND PLASTIC OPERATIONS ON THE HIP*

FRED H. ALBEE, M.D., Sc.D.
NEW YORK

No other joint offers so great an opportunity for the bone surgeon to indulge his ingenuity as does the hip. Yet there is probably no large joint in which less surgery was undertaken, until the last decade. In fact, although arthrodesis of the knee joint for tuberculosis and other conditions had been frequently undertaken by a large number of surgeons for many years, no one had attempted to devise an operation to arthrodese the hip joint until I brought forward this operation[1] for advanced arthritis deformans (ostearthritis) in 1908.

THE MODERN ARMAMENTARIUM

Four influences—the technically facile fracture orthopedic table, the bone mill, the Smith-Petersen approach to the joint, and the possibility of bone grafting—have led to the development of the extensive amount of plastic operations on the hip now possible, the limits of which to a large degree depend on the ingenuity and experience of the operating surgeon.

The anatomy of the hip is exceptional. It is a ball and socket joint, which makes it possible to move it in every direction; the most powerful muscles of the whole body play on it, so that in the event of fractures near it, displacement by muscle traction, either voluntary or involuntary, may be great, and means other than manual effort and the ordinary hip rest are imperative, both in closed and in open surgery. Moreover, the hip is more deep-seated, and therefore more inaccessible than any other joint. For these combined reasons, it is not only imperative that a fracture orthopedic operating table be available, but also that it be so constructed that the various limb postures required may be quickly obtained and readily maintained with the desired amount of traction, during the course of operation, and postoperatively, during the application of plaster-of-Paris casts. It is exactly these requirements that the Albee table meets.

The modern approach to the joint by the Smith-Petersen incision has widened the field, and has made it possible to do plastic operations that were previously considered impossible of accomplishment.

The bone mill has also contributed to the increased ease of operation, owing to the rapidity of cutting that it renders possible.

Also, the ability to transfer bone from one part of the anatomy to another has had a very great influence in bringing about the success of operations on the hip, as well as in extending the operative possibilities. Bone may be obtained locally, or elsewhere, as from the tibia. The bone graft is of extreme value in selected cases, in operations that aim for mobility, and in those that aim for arthrodesis.

TYPES OF OPERATION

Because of the variety of conditions for which reconstruction and plastic operations on the hip are undertaken, it seems best to discuss them in two general groups, based on the aim of the operation: Group 1, cases in which the operation aims to obtain, retain or improve mobility; and Group 2, those in which arthrodesis of the joint is desired.

OPERATIONS IN WHICH MOBILITY IS DESIRED

Under the head of operations in which mobility is desired fall cases of ununited fracture of the neck of the femur; old arthroplasties with dislocation, congenital dislocation of the hip and acquired dislocations.

UNUNITED FRACTURES OF THE NECK OF THE FEMUR

It still remains true that the bone graft peg operation for ununited fractures of the neck of the femur, for the purpose of restoring the hip as nearly as possible to its original anatomy, offers in selected cases the most favorable results. Its field, however, in my hands, has become much more limited than formerly, especially since the introduction of my reconstruction operation, which consists of removing the head of the femur, performing a plastic on the stump of the neck, and forming a physiologic bone-muscle lever to restore abduction (Figs. 1 and 2).

The reconstruction operation is indicated in all cases in which the nonunion has been of long duration, with considerable erosion of the neck of the femur, on both the capital and distal fragments; especially, if it is associated with a considerable amount of laxity between the fragments, or if there is much shortening. (The latter would necessitate pulling down the distal fragment by means of the orthopedic table, thus bringing a great deal of lateral pressure on the bone graft peg, if that type of operation was used.) The reconstruction operation is also desirable in all cases in which, for any reason, a short convalescence is essential, particularly in older subjects. It affords a very satisfactory amount of motion, in some cases as much as 90 per cent. In cases in which erosion has been extensive, with consequent loss of a considerable portion of the neck of the femur, even though the bone graft operation may be successful, the anatomy of the parts has

*Read before the Section on Orthopedic Surgery at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Albee, F. H.: Arthritis Deformans of Hip: Report of a New Operation, abstr., J. A. M. A. **50**: 1553 (May 9) 1908.

suffered, and the range of motion at the hip is necessarily impaired. Moreover, the erosion of the neck and the shortening of the head, sometimes to the degree that it becomes a mere shell, diminish the efficacy of the bone graft in securing motion, and bring about conditions unfavorable to the reception of the bone graft peg. Because of these influences, I now resort to the bone graft operation in not more than 10 per cent. of the ununited fractures that come to me.

TECHNIC OF THE RECONSTRUCTION OPERATION

The head of the femur is removed. The stump of the neck on the distal fragment is rounded, so as to be received with a minimum amount of irritation in the acetabulum. A lever about 4 inches long, including almost the entire trochanter and about one sixth of the diameter of the shaft of the femur, is separated and pried outward, producing a greenstick fracture at the lower end. The mere abduction of the limb, when

Fig. 1.—Typical case of ununited fracture of the neck of the femur, with loss of most of the neck.

the patient is held by the Albee table, throws the neck of the femur into the acetabulum.

The approach is that devised by Smith-Petersen, and is very similar to the Sprengel approach. The skin incision consists of two parts: (1) from the anterior superior spine directly downward, and (2) from this point over the anterior superior spine directly backward along the crest of the ilium for a distance of 3 or 4 inches. With a scalpel, the fascia lata is severed parallel with the crest of the ilium and sufficiently below it to leave a fascia flap to receive sutures in the approximation of the severed fascia lata at the close of the operation. Then, with the Albee osteotome, used for splitting the spinous processes in the Pott's disease operation, the muscles are stripped down from the side of the ilium by subperiosteal separation, and are separated from one another directly downward from the anterior superior spine. The capsule of the hip joint is completely exposed. The joint is entered by a T incision with the stem running directly downward along the neck of the femur. The head of the T is made about three-fourths inch from the rim of the acetabulum, for the purpose of furnishing a cuff of capsule to act as a lining of the outer portion of the joint, and for the neck to rest against when the head has been reconstructed. Care should be taken to make the incision into the capsule sufficiently spacious so that the difficulty of getting the head out of the acetabulum will be minimized. The crucial ligament is then severed by means of a half inch osteotome, and any adhesions of the capsule to the periphery of the head are carefully separated with a scalpel.

The limb is then strongly everted by adjusting the fracture table, so as to make room for the delivery of the head. With two long half-inch chisels or osteotomes, the head is pried out of the acetabulum, with a motion much like that used in eating with chop-sticks: one osteotome is thrust into the inner, and one into the outer substance of the head, and the two are used as levers against the soft parts to pry the head out of place. As soon as the head is delivered, the foot should be inverted by adjustment of the table, so that it points directly upward. Then, with the scalpel, the soft parts are severed in a straight line down on the anterior surface of the trochanter and the outer portion of the shaft of the femur to admit the osteotome that is to split off the lever as indicated in Figure 3*A*. With the broad Albee spinal osteotome, the bone is severed (Fig. 3*A*) and pried outward (Fig. 3*B*). The stump of the neck is then rounded so as to produce a minimum amount of irritation on the acetabulum. The assistant is directed to adjust the table so that the limb is brought to the limit of physiologic abduction at the hip, and at the same time the upper end of the femur is lifted forward and guided into the acetabulum (Fig. 3*B*). Thus the bone lever is automatically held by the posture in the position shown in Figure 3*B*.

In the angle between the shaft and the lower end of the graft, small bone grafts obtained from the upper portion of the shaft of the femur may or may not be inserted, to supply additional foci of osteogenesis and to hasten union. The muscles and soft parts should not be separated at all from the bone lever or from the great trochanter. The bone lever is pulled anteriorly. The wound is now ready for closure, with two interrupted sutures of medium kangaroo tendon in the muscles and fascia attached to the bone lever and in the anterior portion of the wound. All dead spaces are overcome by means of continuous suture of No. 1 chromic catgut. The skin is closed by continuous suture of 0 plain catgut. The line of incision and the suture holes are puddled with tincture of iodin, 3.5 per cent. The leg is put up in a long spica, extending from the tips of the toes to well above the costal margin, with the abducted position undisturbed. The plaster is molded so as to hold the upper end of the femur anteriorly, and is kept on for a period of six weeks. The leg is then allowed gradually to resume the normal position, and the bone-muscle lever assumes the relationship shown in Figure 3*C*. The patient is persuaded to begin walking immediately. Daily massage and manipulation, at both the hip and the knee, are at once instituted, to bring about motion.

ILLUSTRATIVE CASE

The mechanism of my reconstruction operation for ununited fracture of the neck of the femur could not be more beautifully illustrated than by the following case:

Miss H. H., aged 32 years, came to me, July 11, 1924, referred by Dr. G. W. Crile. She had suffered from ankylosis of both hips, apparently the result of suppurative arthritis. In 1917 an arthroplasty had been performed on the left hip, and in 1919, on the right hip, by Dr. Carl Hoy of Columbus. Excellent motion was obtained in both hips, and the operator is to be congratulated on the exceptional result in the left hip. The right hip, however, was a serious disappointment to the patient; so much so that she felt she would much prefer the stiff hip that she had had prior to operation, because there was constant danger of dislocation whenever the limb came to or beyond the midline. Moreover, the function of abduction had been lost.

This case presented two features: (1) a constantly recurring dislocation of the hip whenever the limb swung to the midline or beyond, and (2) loss of the function of abduction. These are the very conditions which my bone-muscle lever was designed to overcome or prevent. The operation, July 14,

1924, was therefore approached with a great deal of interest by myself and my associates. The roentgenograms in this case are interesting (Figs. 4 and 5). The newly formed joint resulting from the previous arthroplasty was found to be an

Fig. 2.—Result after bone-muscle lever has united in place; illustrating the wide distance between the great trochanter and the side of the pelvis in proximity to the rim of the acetabulum, thus allowing for generous abduction.

excellent false joint, with a well formed acetabulum, containing clear fluid, quite closely resembling synovia. The femoral portion of the hip, however, was merely the stump of the neck. The hip was most lax, and could be readily dislocated. The bone lever was erected from the outer and upper end of the femur, precisely as described and illustrated previously. Figure 5 illustrates the bone lever firmly united in its oblique position to the shaft of the femur. In May, 1925, the patient wrote that the hip had not dislocated, and that she considered the result excellent.

MECHANICAL ACTION OF BONE-MUSCLE LEVER

The mechanics of this operation, which have already been discussed, may be further elucidated by a description of the mechanical action of the bone-muscle lever in this case. The insertions of the short trochanteric or abductor muscles were carefully left intact on the trochanter or proximal end of the lever. As the approach to the hip did not interfere with the innervation or force of these muscles, the ability to abduct, lost with the leverage action of the neck of the femur, was restored at the same time that dislocation, when the leg came to the midline or beyond, was prevented by the outward excursion of the proximal end of the lever and the resultant tension not only on the trochanteric muscles, but on the soft parts surrounding them. This caused the newly formed femoral head to be jammed firmly into the acetabulum, thus preventing dislocation (as indicated by direction of the arrow in Figure 3 *C*).

Attention should be called to a misleading statement by Whitman [2] who, in discussing my operation says: "The trochanter, being ill adjusted to the acetabulum, is liable to displacement if motion is permitted, and in both instances there is complete loss of leverage for the abductors, therefore lessened muscular control and a consequent tendency toward flexion and adduction of the limb." This is quite untrue, and indicates a misconception of my technic, as does the illustration in which he attempts to illustrate my reconstruction operation. The latter entirely misrepresents the mechanics of the operation, in that the lever is about one fifth the length I have always made it, and is not oblique to the shaft of the femur, as it should be. The operation, properly performed, does not interfere with abduction, and a review of forty-eight cases shows that muscle control was definitely conserved in all. An inspection of my diagram in this paper (Fig. 3) will show that this operation produces the most efficient leverage action of any operation so far reported.

CONGENITAL DISLOCATION

Because of the extensive scope of this paper, I shall not refer to the various reconstruction operations for congenital and acquired dislocations of the hip, but shall limit my discussion to cases in which the acetabulum is so shallow, or the head so faulty in shape, that the latter will not remain in place after reduction; and those in which the limb has been so shortened and the hip so far elevated that it is impossible to deliver the head into the acetabulum. In such instances, it is necessary to construct an acetabulum higher up on the ilium. Here, again, the surgeon's mechanical ingenuity should be drawn on to meet the exact mechanical conditions found. The methods that I have resorted to in such cases have already been described.[3] One method with which I am particularly pleased is one in which the bone graft material is wholly obtained from the outer table of the side of the ilium itself. The work, in brief, consists of either deepening the acetabulum by means of bone graft wedges, or extending the roof of the acetabulum by means of turning down a graft from the outer table of the ilium over the head of the femur, situated in the shallow acetabulum (Figs. 6, 7 and 8). Or an acetabulum may be formed higher up on the ilium.

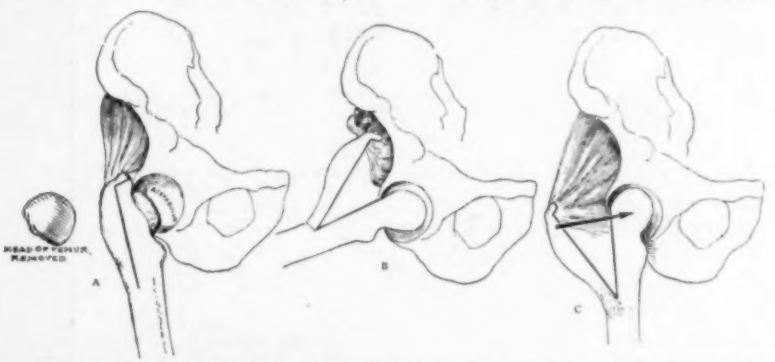

Fig. 3.—Albee's method of treating ununited fractures of the neck of the femur by removing head of femur and producing greenstick fracture, the trochanter being swung outward on the periosteal hinge. The remains of the neck of the femur and upper end of the great trochanter are to articulate with the acetabulum, the inverted portion of the capsular ligament contributing to the formation of the new articulation.

I wish to emphasize the wisdom of adopting this last procedure in all cases in which it is necessary to employ

2. Whitman, R.: The Reconstruction Operation for Ununited Fracture of the Neck of the Femur, Surg., Gynec. & Obst. **32**: 482 (June) 1921.
3. Albee, F. H.: Bone and Graft Surgery, 1915 and 1919.

such great force in securing reduction that undue trauma to the acetabulum or the head of the femur results. Formerly, and unfortunately in certain instances even today, surgeons regarded reduction as the prime indication of satisfactory treatment, regardless of the trauma entailed. Further study of such cases, however, reveals the fact that so much limitation of motion resulted from the trauma at the time of reduction that the late results must be classed as most unsatisfactory. Had the surgeon been less heroic and more ingenious in his methods, constructing an acetabulum higher up on the side of the ilium, the late results would have been a slight amount of shortening, with a satisfactory functional hip and a large range of motion.

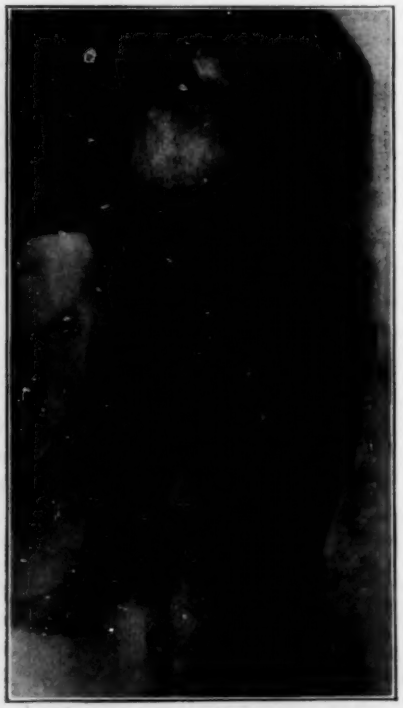

Fig. 4.—The result of a previous arthroplasty, with the head and part of the neck of the femur removed. Because of the close proximity of the tip of the trochanter to the outside rim of the acetabulum and side of the pelvis, the femur is transformed into a lever with its fulcrum point at the tip of the trochanter. Consequently, abduction of the femur draws the reconstructed articular portion (on its neck) out of the acetabulum, and dislocation results.

Numerous other types of bone plastic operations have been practiced in these cases, and will be described at a later date.

CASES IN WHICH ARTHRODESIS IS DESIRED

No joint in the body is better adapted to arthrodesis, or offers a better functional result following it, than does the hip. Although I have been performing such operations for more than fifteen years, I am still surprised and gratified beyond expectation by the late results in certain patients who come back to me to express their satisfaction. I have no other group of cases in which operation affords so high a percentage of thoroughly satisfied patients. A patient who is told that the hip is to be stiffened to relieve pain naturally expects increased limitation of motion in that quadrant of his body. He is most agreeably surprised to find that, in his own judgment, the motion has been increased after the hip has been ankylosed. This happens in a large percentage of cases. When the hip becomes entirely ankylosed, and all anxiety regarding pain has ceased, the muscle spasm induced by nature's attempt to guard the hip joint is relieved, and the compensatory motion in the lumbar spine or knee joint is so great that the patient believes motion has been increased, in certain cases even in the hip itself. This is accounted for by the unusual anatomic condition: the psoas magnus controls motion not only at the lumbar spine but also at the hip. Other muscles control motion at both the knee and the hip, namely, the biceps femoris, semimembranosus, semitendinosus, rectus femoris, sartorius and adductor gracilis. Consequently, involuntary muscle spasm, which takes place in muscles controlling motion at the hip, not only causes pain at the hip, but has a marked inhibitory influence over motion in the lumbar spine and in the knee joint.

The first medical body before which I demonstrated the operation for arthrodesis of the hip was the International Congress of Surgery at Budapest in 1909; at that time I reported five cases, all of arthritis deformans. Since that time I have somewhat modified the technic, and have applied the operation to a large variety of hip conditions, such as tuberculosis in the adult, infectious arthritis, comminuted fractures and dangle hip from paralysis.

MODIFIED TECHNIC

The approach is through the Smith-Petersen incision. The technic originally designed consisted merely of removing all cartilage from the superior surface of both the head and the acetabulum, so that cancellous bone of the head comes in contact with cancellous bone of the acetabulum. Because of a certain percentage of delayed unions, and a few failures to unite, I have supplemented this procedure by sliding a graft (approximately 1½ inches wide, and extending from just above the rim of the acetabulum to just below the crest of the ilium) downward toward the outer table of the ilium into the split substance of the trochanter, having first denuded and widened the neck of the femur, so as to secure as much raw surface of bone for contact with the under surface of the graft as possible. In certain instances it has been possible to swing the graft on a pedicle of muscle instead of sliding it. In obtaining the graft, care should be taken to leave the rim of the acetabulum intact, in order to furnish the maximum surface of acetabulum to fuse with the head of the femur. Care should also be taken that about one half of the graft is contacted with the pelvis, and one half

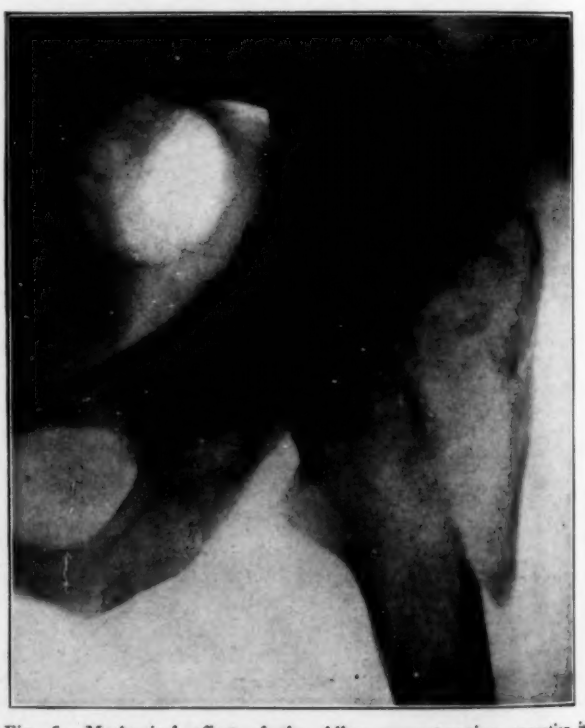

Fig. 5.—Mechanical effect of the Albee reconstruction operation in displacing outward the fulcrum point of the trochanter, thus taking away the leverage or dislocating action from abduction of the femur. It further illustrates the mechanical advantages of this operation as set forth in the text.

with the femur; this produces an osteogenic or vascular conducting bridge, spanning across the hiatus, to be arthrodesed. Caution is necessary in attempts to arthrodese any joint, as nature is most efficient in restoring motion and interfering with arthrodesis following operative procedures—one reason for fortifying the result by adding another element of safety, the bone graft.

The technic, when applied to any lesion whatever, varies only in accordance with the mechanical confirmation found.

It has recently been stated [4] that arthrodesis offers "an uncertain outcome because abduction of the limb, the attitude of election, separates the upper surface of the head from the acetabular roof to which it should be apposed in order to secure union, and in a large proportion of cases, although sufficient restriction of motion may be assured after prolonged fixation to relieve pain, there is recurrence of a certain degree of flexion and adduction deformity after the support is removed." I can only recommend that such untoward results can be entirely avoided by the use of the proper technic, and it is for this very reason that I have in late years employed the bone graft as a safeguard, and as an added element in hastening and insuring solid bony ankylosis.

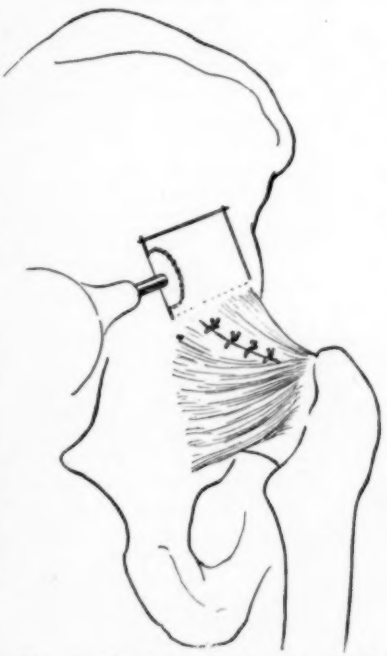

Fig. 6.—Closed incision in the capsule that was made to inspect the depth of the acetabulum, etc. The motor saw cuts for the turning down of the outer table of the ilium over the femoral head and overlying capsule, as illustrated in Figure 7, may be noted.

It is desirable to employ the immobilizing influence of union of the femur to the pelvis in cases of acute or subacute joint disease, especially tuberculosis, in which for various reasons it is not desirable to enter the infected area. This is principally because of the danger of causing metastatic infection, immediate or remote, by traumatizing an acute tuberculous area or lesion. Moreover, since the tubercle bacillus inhibits osteogenesis, any tuberculous joint is an unfavorable site in which to attempt to secure ankylosis. In such instances, I have employed a technic, which I first described in my Bone and Graft Surgery (1915 edition).

Two large strong tibial grafts are employed. The approach is by a curved incision over the gluteal muscles lying between the ilium, just posterior to the anterior-superior spine and the tip of the great trochanter. A straight incision through the fascia and the entire muscle is made from a point just inferior and posterior to the anterior-superior spine of the ilium to the anterior surface of the great trochanter; another straight incision is made from a point approximately from 1½ to 2 inches posterior to the upper end of the first incision, to the posterior surface of the great trochanter; the two converge to a common point at the inferior portion of the outer surface of the trochanter. Then, with the motor saw, bone incisions are made in the trochanter, converging below and in a line with the incisions just made in the muscles, thus leaving a triangular area of the trochanter between the converging sawcuts (Fig. 9). The bone on the anterior portion of the trochanter is turned anteriorly with an osteotome, the soft parts being used as a hinge. The same precedure is carried out on the bone posterior to the second motor-saw cut, except that the trap door of bone is turned posteriorly. The shaft of a long osteotome or chisel is then laid in this gutter, and its cutting edge placed on the side of the ilium; then, at the upper end of the anterior incisions in the muscle, the outer table of the ilium is severed by gentle taps of the mallet. The hole is enlarged to receive the end of a tibial graft, which is later to be driven in. The bone at the upper end of the posterior incision in the gluteus muscle is treated similarly. The tibia, preferably on the same side, is laid bare from the tubercle to about 2 inches above the ankle joint. With the Albee bone saw, a graft is obtained from the center of the tibia. This should be sufficiently long so that, when divided in halves, it will furnish two grafts adequate to span the space from the trochanter to the holes already made in the ilium. The ends of the graft are made wedge shaped, so that they can be driven into the holes in the ilium, by placing the graft in the trochanteric gutter and gently rapping it into place with a bone-driving instrument, which simulates a nail set used for a similar purpose by the carpenter. The trap doors of bone are swung back over the distal ends of the graft and held by means of interrupted sutures of medium kangaroo tendon, thus keeping the graft in position. The wound is then closed by the usual method.

Figure 10 shows the condition in a case of tuberculous hip disease, which had been treated for three years by adequate braces before the patient (a woman, aged 43) came to me. I continued the mechanical treatment for an additional period of two years by means of the Phelps brace with crutches, but at the end of this time (1915), the hip was more acutely painful than at any previous period. Because of the discouragement of both the patient and myself, I resorted to the operation just described. The roentgenogram presented in Figure 10 is a most interesting demonstration of the influence of mechanical stress on a graft, in that the graft increases in strength and diameter in proportion to the amount of mechanical stress brought to bear on a particular portion. It may be noted that these grafts are much larger in diameter at the point near the trochanter where more mechanical stress comes on them than at the end where they are united to the ilium, which is the end of the lever distal to the fulcrum point.

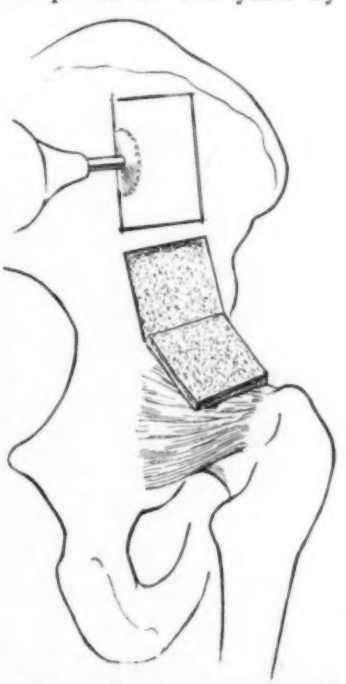

Fig. 7.—Bone from the outer table of the ilium turned down with periosseous structures, the bone itself acting as a hinge. With the motor saw removed, the bone from the upper portion of the ilium serves for a brace, as indicated in the next illustration.

This patient was sent to the Burke Foundation Convalescent Hospital at White Plains, where she made

4. Ann. Surg. **80**: 781 (Nov.) 1924.

such an uneventful and satisfactory recovery that she was engaged as an employee in the hospital, and has continued there ever since with absolute relief of all symptoms. She is in perfect health at the time of writing.

Fig. 8.—The completed bone work, with interrupted kangaroo sutures in place. These kangaroo tendon sutures are inserted into the capsule and into the drill holes in the bone graft, in order to hold them firmly in place.

Since this patient was operated on, twelve other cases have come to operation. These will be the subject of an independent paper to be published later. Three of the patients were suffering from acute symptoms and had been treated elsewhere, by stretching and manipulation, for a pronounced adduction and flexion deformity. In each instance, the deformity had recurred, with an increase of pain. One of the patients had received manipulative treatment three times, with a recurrence of the deformity each time. In all three cases, the adduction and flexion deformity was easily corrected at my operation by the influence of the orthopedic table, the patient being fully etherized. The bone grafts have afforded arthrodesis, immobilization and the avoidance of braces.

INDICATIONS

This operation for tuberculous hips is especially indicated in cases of long standing in which there has been an extensive destruction and absorption of the head and even the proximal end of the neck of the femur, and occasionally of the acetabulum; that is, in cases in which the bony material that might be utilized to secure fusion by the ordinary type of arthrodesis is absent. By the use of the bone graft, entrance into the tuberculous joint is avoided, and the active osteogenic bone of the grafts is contacted with the healthy active bone of the femur on one side and of the pelvis on the other. The full effect of the arthrodesis is thus afforded by means of bone graft bridges in the soft parts extra-articularly.

40 East Forty-First Street.

ABSTRACT OF DISCUSSION

Dr. W. C. Campbell, Memphis: Dr. Albee has brought to our attention a most interesting and important subject. There are four different types in which reconstruction is necessary in hip joints. They are those in which the weight of the body is thrown on the muscle and the soft structures, from which many suffer considerable hip strain, referred pain and various symptoms. The four conditions that I mention are, first and of most importance, an old fracture of the neck of the femur. This condition is considered absolutely hopeless by the profession in general. In old fractures of the neck of the femur we now have methods such as Dr. Albee and others have demonstrated, in which relief can be given to a large percentage and we can not only relieve the constant pain but also place the patient on his feet. Of course he has a persistent limp, but crutches are discarded. The second type of case that I might mention is the paralytic dislocations, such as dislocation of the hip joint following poliomyelitis, in which there is considerable mechanical disability. A third class is the old congenital dislocations. The fourth class is the result of tuberculosis. In paralytic dislocation of the hip I employ a technic which consists of cutting loose the upper portion of the flat acetabulum, and displacing outward, so as to extend and deepen the socket. Multiple flaps of bone are turned downward from the crest of the ilium to reinforce the extended acetabulum. In congenital dislocations, we do just as Dr. Albee has demonstrated: make the acetabulum above the seat of the normal joint. In some cases, Dr. Albee changes the fulcrum of the trochanter and gives a direct muscle pull in exactly the right direction. That is a great advantage. I do not see why it could not be used in conjunction with the Brackett operation. I am not quite sure that it is necessary to remove the head in all these cases. It takes a little more time, and I think that if this is well reamed out we may obtain pretty fair fibrous union, even bony union. I think that extending the acetabulum, as mentioned above, is an advantage. As to arthrodesis of the hip, I have had no experience with that method. It is very difficult to accomplish fusion in the hip joint by removing all the cartilage even to raw bony surfaces. At least, I have had a great deal of difficulty in producing solid bony fusion in this way, and the method that Dr. Albee has shown I think gives a better chance.

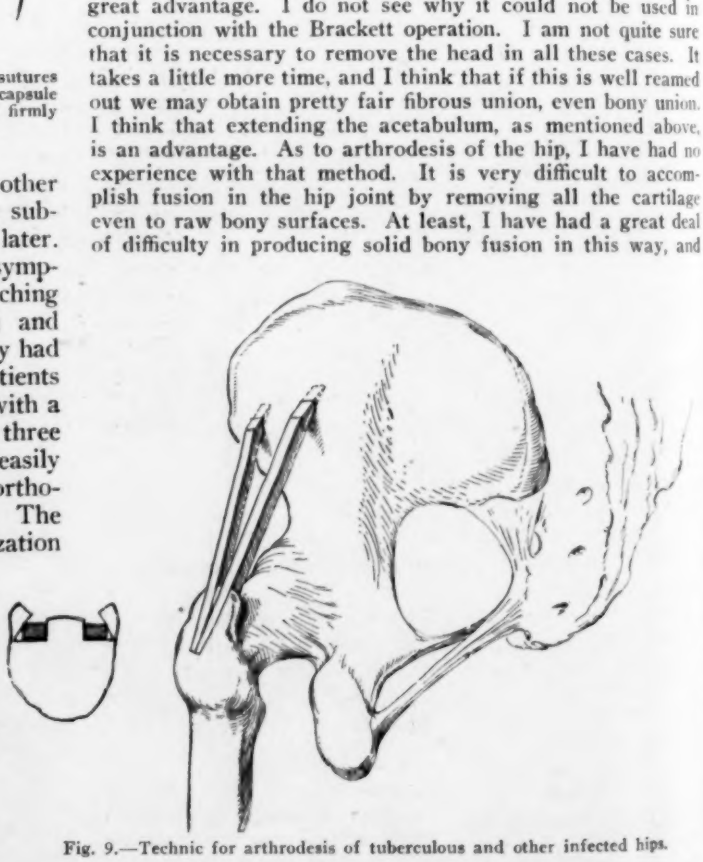

Fig. 9.—Technic for arthrodesis of tuberculous and other infected hips.

Dr. M. N. Smith-Petersen, Boston: For some time we have used the Whitman operation in ununited fractures of the neck, and it is a technically easier operation than the operation described by Dr. Albee. Dr. Albee's operation requires thorough familiarity with his equipment, not only on the part of the surgeon but also on the part of the assistants.

In performing the Whitman operation I myself prefer to transplant the trochanteric muscular attachment with the shell of bone rather than the entire trochanter. Earlier union and earlier function are thereby secured. In regard to extra-articular arthrodesis, we have come to the conclusion that we do not get consistently good results. In the intra-articular arthrodesis, dislocating the hip, cleaning out the acetabulum and denuding the head, we use in addition extra-articular osteoperiosteal grafts to hasten bony union. In popping the head of the femur out of the socket, the capsule should first be widely opened. Incomplete exposure invariably means unnecessary trauma. May I say a word about the Lorenz operation? I feel so strongly against that operation that I want to take the opportunity to say that it is mechanically unsound; it does not consider anatomic or physiologic laws. At the present time it is our duty in every possible way to prevent surgeons from undertaking an operation which cannot help but produce ill effects later. Temporarily, it may give a functionally good result; but, as years go by, the results are bound to be disastrous.

DR. M. S. HENDERSON, Rochester, Minn.: I should like to ask Dr. Albee about the advisability of removing the head of the femur in these cases. I know that there are certain cases in which, no doubt, the head is so atrophied and devitalized that it should be removed. Dr. Campbell called attention to Dr. Brackett's operation, and, in several cases, I have had excellent results by employing this operation, which consists of freshening the head of the bone, reshaping the upper head of the femur and placing them in apposition and maintaining that position until they unite. In one case in which there seemed to be no life in the head, so far as I could see, and it looked as though it was atrophic, the head went on to good function, securing its nutrition from the lower fragment. The Brackett operation is particularly applicable in younger people when the neck is completely absorbed. So many factors enter into the selection of operation for this type of reconstruction work that, in a brief discussion of this kind, it is difficult to do justice to the subject; but I should like to know Dr. Albee's candid opinion as to the necessity of the removal of the head of the femur and how often he thinks it should be done, comparatively speaking. Dr. Albee stated that in only 10 per cent. of the cases that come to him now was he doing the bone grafting operation. That is very interesting and would indicate that the bone graft in the reconstruction work in the neck of the femur has not lived up to what we had expected. Nevertheless, when there is a fair amount of neck left to the femur, and the patient is reasonably young and in good condition, it seems to me that the bone graft reconstruction operation is the one of choice.

Fig. 10.—Postoperative result eight years after operation. The influence of mechanical stress on the grafts may be noted. The joint has become completely bony ankylosed.

DR. W. G. STERN, Cleveland: The Whitman modification of Brackett's operation, which Whitman also calls the "reconstruction operation" of the hip joint, does not depend on bony union for its success, and it is fairly easily done. Still, the shock of such an operation in old persons is a danger that should not be passed over lightly, and that leads me to speak in favor of the Lorenz "bifurcation operation" that Dr. Smith-Petersen condemns. There is something to be said in favor of the anatomic arrangement of affairs in the Lorenz operation. In an ununited fracture of the neck of the femur, one leaves the head in place, and the capsule of the hip itself is not disturbed. The operation is merely a subtrochanteric or intratrochanteric osteotomy of the shaft of the femur, and the upper part of the lower fragment is so placed by abduction that it either impinges below the fractured head of the femur, or in congenital luxation of the hip so impinges on the acetabulum that the original capsule of the joint is between the upper end of the distal fragment and the acetabulum itself. Therefore, having the original capsule between the bony fragment and the articular surface, I do not see how this is more unscientific and more unsound than the usual arthroplasty operation at the neck of the femur, in which a fascia graft is taken from somewhere else and placed between the two raw surfaces. The bifurcation operation can be done very easily, and takes only ten or fifteen minutes. There is practically no hemorrhage, and no sutures are used. All one needs do is to abduct the limb in such a way (about 30 degrees) that the upper end of the distal fragment is either in the acetabulum or impinges beneath the head of the bone in ununited fracture. The upper fragment, whatever it may be, so rotates inward that one has a real bony hand or buttress projecting up against the acetabulum, and one has the original, undisturbed capsule of the joint in between the operative field and the acetabulum. The thing for us to do is to test out the operation by choosing our cases wisely, treating them properly and then studying our results. Be that as it may, I believe with Dr. Albee that the day has come when, in ununited fracture of the femur, we had better do a reconstruction operation on the hip joint than the old dowel graft operation. I should like to ask Dr. Albee one question: In contradistinction to Dr. Whitman, who chops off the trochanter and then implants it down farther on a freshened portion of the shaft, Dr. Albee splits the trochanter and part of the shaft of the femur with it, and abducts it. Dr. Albee did not tell us how he keeps this wide angle open. To my mind, something must go well in between this split portion of the trochanter and part of the shaft, and the remains of the shaft of the femur itself.

DR. F. J. GAENSLEN, Milwaukee: This discussion with reference to the Lorenz operation is really quite apropos, because in a measure the operation done by Dr. Albee is a bifurcation operation, although it is not done in the way that Lorenz or von Bayer (who devised this practically simultaneously or perhaps just prior to Lorenz' first publication) does it. In my travels abroad in 1922, I found that the operation had received a great deal of attention and a great deal of enthusiastic support, and while I myself have done the operation in only two cases, I am going to continue it, choosing my cases carefully and withholding further judgment until further time has demonstrated the usefulness of it.

DR. F. H. ALBEE, New York: For fear that Dr. Smith-Petersen misunderstood the technic in my reconstruction operation, I would say that in that particular instance the bone saw is not necessary at all. But any man who is doing reconstruction bone surgery should have the bone saw on his table all the time, in case it is needed. The argument against the operation does not appeal to me. In reference to the necessity of removing the head, I take it that it is felt that it may be possible to leave the head in place and do exactly the same operation as I have done. I do not know but that may be so. I have been fearful of that for these two reasons: First, that if fibrous union results, will it not cause pain? I am afraid that weight bearing would produce pain. Then, as to motion, I am very fearful of getting bony union in these very bad cases with just a shell of the head left. If one does leave the head, it is similar to a fracture in a joint. In reference to the bifurcation operation of Lorenz, I absolutely condemn it because it is not surgical. We should have things wide open and see what we are doing, and put our

parts together as they ought to be put. I have seen excellent results produced by that operation, but what percentage of results is one going to get by such an inaccurate method? With reference to Dr. Stern's remark about the wide angle, of course, the lever is automatically held to that wide angle by the posture of the limb that is put up in strong abduction, completely out beyond the limits of physiologic abduction. I have used small bone grafts in that V cavity, and at other times, I have not. Of course, we have a greenstick fracture there at the lower end and it is very favorable to union.

THE ETIOLOGY OF INCRUSTED CYSTITIS WITH ALKALINE URINE*

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AND
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ROCHESTER, MINN.

Incrusted cystitis is a chronic inflammatory condition of the urinary bladder manifested clinically by symptoms of dysuria, urgency and frequency, and the passage of gritty material or sand. In certain cases the urine is strongly alkaline, the degree depending somewhat on the severity and chronicity of the process. Usually the urine contains a large amount of blood and mucus, and sometimes pus. The marked discrepancy between the number of red blood corpuscles and pus cells in the urine in this form of cystitis has often been contrasted with the ratio in ordinary cystitis. Because of the nature of the gritty material and the alkaline condition of the urine, this particular type of cystitis has been referred to as chronic alkaline phosphatic cystitis. On cystoscopic examination the bladder presents crusted material which is hard, is firmly embedded in the mucous membrane, and may be limited, affecting only a small area of the bladder surface, usually in the trigonum, or generalized, covering almost the entire mucous membrane. Often these deposits are found when patients give a history suggestive of previous ulcer of the bladder or mild cystitis, and they sometimes appear in the bladder after fulguration following catheterization, or when tumor growths have been previously observed.

Without considering the clinical characteristics of the disease further than to state that this rebellious form of cystitis is much more prevalent than is generally supposed, and that the treatment has often been unsatisfactory because of the obscure nature of the infection, we shall review some of the results obtained by an intensive study of three cases and a series of experiments on animals.

Various etiologic factors and numerous types of bacteria have been regarded as specific causes of this disease. Since a large percentage of bladder infections descend from the kidney or are carried by the blood from remote primary foci, a systematic clinical study of patients so infected was made. While no particular focus could be found in the patients we felt it desirable to carry on some experimentation along the lines that have been so successfully pursued by Rosenow, Meisser, Hayden and others. It was difficult to obtain accurate information concerning the kidneys on account of the technical difficulties encountered in catheterizing the ureters. The small size of the bladder and the tendency of hemorrhage to follow overdistention, together with the marked irritability and incrustation around the ureteral orifice, made it impossible to insert catheters into the ureters, except with the aid of sacral anesthesia and the intravenous injection of indigocarmin. Eventually the ureters were catheterized in each of the three cases. Altogether, these three patients were under observation for more than a month, and during that time many cultures were made of catheterized urine. We obtained almost always a streptococcus that produced green colonies on glucose blood agar and showed slight hemolysis on plain blood agar. Staphylococci and colon bacilli were also obtained. Along with these organisms we isolated a gram-negative bacillus which produced white colonies on Endo medium, and formed a moist, more or less sticky bluish gray, glistening colony on agar. This organism fermented, with the production of acid and gas, glucose, galactose and xylose, and produced acid in glycerin, and to some extent in litmus milk. The following sugars were not fermented at all: maltose, lactose, sucrose, mannite, dulcite, inulin, inosyte, salicin, arabinose, raffinose, rhamnose and dextrin. Occasionally there was slight acid formation in levulose, but this we attribute to the impurities often found in that particular sugar. These characteristics, together with certain others, suggest that this is similar to that bacillus (*Salmonella foetida*) which Perez isolated from the nasal discharges of children suffering with ozena. However, certain differences present themselves, so that we feel for the present, at least, that it is better to call the particular bacillus described above *Salmonella ammoniae*. The significance of the name lies in the fact that this organism is capable of breaking urea into ammonia and carbon dioxid in a very short time. Sterile urine, when inoculated with this bacillus, will have all its urea converted into ammonia within at least six hours. It will also convert the urea of blood into ammonia.

Following the method of Rosenow, attempts were made to induce localization within the urinary bladder of experimental animals by injecting urinary sediment and the organisms isolated from the urine into the blood stream of rabbits. Some animals were injected with pure cultures of single organisms, while others were injected with combinations of organisms. When cultures were used, the urine was inoculated into brain-broth tubes; then the broth suspension was injected in varying amounts after twenty-four or forty-eight hours' incubation. Also, organisms recovered from the urine or heart's blood of these animals were injected into the blood stream of other animals, and in some instances a second and a third animal passage was made. Some of these animals were allowed to live as long as possible, while others were killed in from twenty-four hours to several weeks after injection. In all, about 200 animals were injected for these experiments. As might be expected when animals were allowed to live longer than three or four days, lesions were rarely found which were acute enough to be attributable to the injection. There were seven animals whose bladders contained distinct inflammatory lesions, but none of these showed incrustations or deposits in the bladder mucosa. Of these seven, only four showed lesions when injected with urine or cultures of urine from the patients. The other three lesions were in animals injected with bacteria after animal passage. Twelve

* From the Sections on Clinical Pathology and on Urology, Mayo Clinic.

* Read before the Section on Urology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

animals showed slight or questionable lesions in the bladder. However, there were just as many lesions in other parts of the body, and many more in the kidneys than in the bladders.

Since the results of these experiments were so inconstant, it did not seem wise to try to tabulate them at all, but they show that under the conditions it was not possible to cause incrusted cystitis in rabbits by injecting intravenously the organisms obtained from urine of patients suffering with incrusted cystitis.

At this stage of our work, we attempted to find out a little more specifically the nature of the urine in these cases. Accordingly, ureteral catheters were inserted, and when these were in place a urethral catheter was passed. The urine was collected for twenty-four hours in two cases, and for one hour in the third, the urine from bladder and kidney being kept separate. The flasks in which the urine was collected were embedded in ice, and the chemical analyses were carried on immediately after the experiment.

Table 1 gives in detail the results of these studies, and shows that whereas the urine as it comes from the kidney is acid and contains the normal ratio of urea nitrogen to ammonia nitrogen, the urine from the bladder, although collected simultaneously, is markedly alkaline, this alkalinity being accounted for by the change of urea into ammonia. Since this is so characteristic of the action of *Salmonella ammoniae*, it seems evident that the production of an alkaline urine within the bladders of these patients was due to *Salmonella ammoniae*. We were therefore inclined to consider this organism of importance in this disease, since the production of an alkaline urine would result in the precipitation of certain insoluble salts.

Table 2 shows an analysis of some of the incrustations removed through the cystoscope. They consist chiefly of calcium carbonate, calcium-ammonium phosphate and magnesium-ammonium phosphate.

TABLE 1.—*Urine Analysis*

			Ureteral												Bladder			
								p_H		Culture		Microscopic						
Case	Age*	Symptoms	Duration, Years	Pus	Blood	Reaction to Litmus	Hours Collected	Right	Left	Right	Left	Right	Left	Chemical Analysis	Per Cent.	p_H	Culture	Chemical Analysis	Per Cent.
1	43	Frequency, nocturia, "sand," hematuria	10	Occasional	2	Alkaline	1	...	6.4	..	—	..	—	(30 c.c. urine) Total N = 0.4676† Urea N = 0.4186 = 89.3 NH_3 N = 0.0221 = 4.7	94.0	8.6	Streptococcus, Salmonella ammoniae	(80 c.c. urine) Total N = 0.2016 Urea N = 0.1666 = 88.6 NH_3 N = 0.0221 = 11.07	93.6
2	29	Dysuria, frequency, hematuria	3	1	3	Alkaline	24	6.8	6.8	—	—	—	—	(Combined ureteral specimen 250 c.c.) Total N = 1.092 Urea N = 1.025 = 96.5 NH_3 N = 0.0113 = 1.0	97.5	8.2	Streptococcus, Staphylococcus, Salmonella ammoniae	(740 c.c. urine) Total N = 3.454 Urea N = 3.0536 = 88.7 NH_3 N = 0.0264 = 7.37	96.0
3	30	Hematuria, frequency burning	2	0	3	Alkaline	24	5.8	5.8	—	—	—	—	(Combined ureteral specimen 335 c.c.) Total N = 1.32 Urea N = 1.13 = 86.3 NH_3 N = 0.10 = 7.5	93.8	8.2	Staphylococcus, Salmonella ammoniae	(2,150 c.c. urine) Total N = 5.92 Urea N = 4.09 = 69.0 NH_3 N = 1.46 = 24.5	93.5

* The three patients were women.
† Determinations are in terms of grams for each 100 c.c.

TABLE 2.—*Analysis of Bladder Deposit or Incrustation*

	Gm.
1.	
Dried weight	0.02148
$Mg_3(PO_4)_2$ and $Ca_3(PO_4)_2$	0.00156
$Mg(NH_4)PO_4$	0.00237
$Fe(PO_4)$	0.00108
$CaCO_3$	0.00573
Organic matter	0.01074
2.	Gm.
Dried weight	0.00590
$CaCO_3$	0.01231
$Mg_3(PO_4)_2$ and $NH_4H_2PO_4$	0.01016
Organic matter	0.04343
3.	Gm.
Dried weight	0.00050
$CaCO_3$	0.01710
$Ca_3(PO_4)_2$ and $NH_4H_2PO_4$	0 02830
$Mg_3(PO_4)_2$ and $NH_4H_2PO_4$	0.00482
Organic matter	0.01028
4.	Gm.
Dried weight	0 03910
$CaCO_3$	0.00594
$Ca_3(PO_4)_2$ and $NH_4H_2PO_4$	0 00479
$Mg_3(PO_4)_2$ and $(NH_4)_2HPO_4$	0 00520
Organic matter	0.02317

TABLE 3.—*Chemical Analysis of Bladder Urine Collected for Twenty-Four Hours* *

	Case 1 850 c.c. p_H 8.0		Case 2 640 c.c. p_H 9.4	
	Gm.	Per Cent.	Gm.	Per Cent.
Amount				
Reaction				
Total nitrogen	10.13	....	5.02	....
Urea nitrogen	5.62	55.5	1.73	32.4
Ammonia nitrogen	3.51	34.6	2.48	49.4
Uric acid nitrogen	0.07	0.6	0.13	2.6
Creatinin nitrogen	0.35	3.6	0.27	5.3
		94.3		89.7
Calcium	12.2		....	
Magnesium	0.96		....	
Sodium chlorid	5.50		7.54	
Phosphate	2.023		2.00	
Titratable acidity	0.0		....	

* Twenty-four hours' starvation prior to collection; nitrogen intake during collection, 11 gm.

Table 3 gives a more complete analysis of twenty-four hour samples of urine of two of these patients and shows the high percentage of ammonia nitrogen, a part of which probably resulted in the action of *Salmonella ammoniae* while the urine was standing awaiting analysis.

In the next experiments we attempted to implant a culture of *Salmonella ammoniae* in the bladder of experimental animals. Five guinea-pigs were catheterized, and 0.5 c.c. of a twenty-four hour broth suspension of this organism was introduced into their

bladders. Two of the guinea-pigs were killed and examined three days later, and the remaining three, a week after the injection. The bladders were entirely normal and the organism could not be recovered from the urine. We next attempted to implant *Salmonella ammoniae* in the bladder of animals in which we had induced an artificial chemical cystitis. After some experimentation we determined that the instillation of from 0.5 to 1.0 c.c. of a 0.1 per cent. alcoholic solution of salicylic acid would produce a rather intense cystitis. This varied from small patches of ulcerated areas to general sloughing of the entire mucosa of the bladder. In some instances perforation of the bladder resulted and the animals died from peritonitis. Usually at the end of ten days healing in the bladder had progressed until it was difficult to detect grossly that the bladder had been injured, and by the end of two weeks 98 per cent. of the animals had recovered and new mucosa had practically covered the bladder.

The most acute stage of this ulceration and cystitis occurs about two days after the instillation of salicylic acid. Twenty-two guinea-pigs were given this application of salicylic acid, and from two to seven days later 1 c.c. of broth suspension of *Salmonella ammoniae* was injected. These animals were allowed to live for varying periods, ranging from four days to one month. On examination, all but one of the bladders showed intense cystitis with ulceration and deposition of hard gritty material on the affected areas; in some bladders, definite stones had formed and were found floating in the urine. These deposits were soluble in acetic acid, and proved to be calcium phosphate, calcium carbonate and mixtures of other inorganic salts of the alkaline metals. One bladder showed no incrustations and had completely healed after one month. Cultures of the urine from the bladders of fourteen animals were taken at necropsy, and each gave a pure growth of *Salmonella ammoniae*.

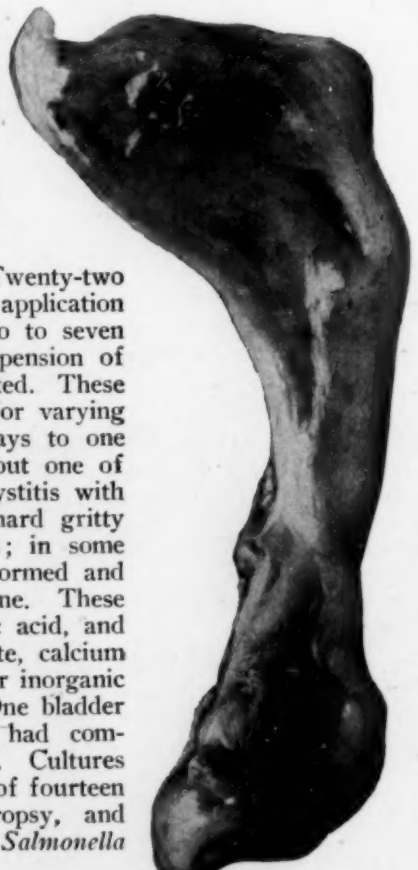

Fig. 1. — Rabbit 40: 1 c.c. of a 1: 1,000 alcoholic solution of salicylic acid injected into the bladder, followed five days later by the injection of 1 c.c. of a broth suspension of Salmonella ammoniae. Necropsy performed fourteen days later.

A control series of six animals in which we injected *Bacillus coli* instead of *Salmonella ammoniae* gave no incrustations or stone formation, the bladders healing just as if the treatment with salicylic acid had been followed by no other procedure.

Rabbits were also used in similar experiments. After treatment with salicylic acid only, the bladders healed in about the same length of time as in the guinea-pigs. Ten rabbits were injected with *Salmonella ammoniae* after treatment with salicylic acid. Of these, six showed definite incrustations superimposed on the chemically induced ulcerative cystitis (Figs. 1 and 2). The other four did not develop these incrustations. Stones were also developed in the bladders of the rabbits, and one of these was 22 mm. long and 7 mm. wide. It was found obstructing the outlet of the bladder. *Salmonella ammoniae* was isolated from the urine of the six rabbits which had shown incrustations, while it was absent in the other four. It is not certain whether we succeeded in injecting the organisms into these four bladders. Sometimes the catheter passed into the bicornate uterus, and if the bladder was empty it was not possible to determine by aspiration that the catheter was not in the bladder. In all of the animals with incrusted cystitis the urine was very alkaline, the figure of the hydrogen-ion concentration being as high as 9.6 in some instances. A very definite odor of ammonia was detected, but no chemical analyses were made.

These experiments led us to obtain from patients who had been at the clinic previously with the diagnosis of alkaline phosphatic cystitis a specimen of urine for examination. The urine was sent to us in a sterile container; it was taken under as sterile precautions as possible in dealing with patients at a distance. Sixteen patients responded to this request, and of these seven had alkaline urines. In each of these seven *Salmonella ammoniae* was recovered, while in the others, being acid urines, this organism was not obtained. Table 4 is an analysis of these urines, and it shows how consistently they ran.

SUMMARY

From our study and experiments, we conclude that the inorganic salts which are deposited in the mucous membrane, in cases of incrusted cystitis with alkaline urine, are due to a secondary invader, a gram-negative bacillus, which in its growth liberates an enzyme, a urease capable of converting urea into ammonia, thereby causing an alkaline reaction in the urine. The resulting alkalinity precipitates the calcium, magnesium and ammonium salts. We believe that the process may be superimposed on any type of bladder lesion, the initial lesion being produced by some method which we have not investigated, but quite likely often being that formed from a focus of infection, as Rosenow, Meisser and Bumpus have demonstrated. It is interesting to note that Perez' bacillus, which is credited with producing crusts in the nose and a foul odor, also has the ability to convert urea into ammonia.

Since this type of cystitis appears far more commonly in women than in men, and since the organisms of the Salmonella group are common inhabitants of the intestinal tract, we believe it not unlikely that the source of *Salmonella ammoniae* is the gastro-intestinal tract and that the disease is caused by implantation of this organism on some already existing lesion in the bladder. This conclusion is all the more justifiable because so often the history dates, in the case of women, from childbirth or from catheterization. Indeed, we have succeeded in isolating this organism once from a culture of a stool.

Incrusted cystitis with alkaline urine is caused by the implantation of *Salmonella ammoniae* in a bladder which is already the seat of some form of inflammatory or tumorous lesion. If the organism gains a foothold, it rapidly changes urea into ammonia, with resulting precipitation of alkaline inorganic salts. This condition can be reproduced experimentally in laboratory animals.

TABLE 4.—*Urine: Incrusted Cystitis*

pH	Mucus	Blood	Pus	Gritty Deposits	Bacteria
7.0	—	—	—	—	Bacillus coli
5.0	+	—	—	—	Streptococci, Bacillus coli
5.8	—	3	4	—	Streptococci, Bacillus coli
5.0	—	2	4	—	Bacillus coli
5.0	—	Occasional	3	—	Streptococci, Bacillus coli
5.0	—	—	1	—	Bacillus coli
5.0	—	Occasional	1	—	No growth
6.0	—	—	Occasional	—	Streptococci, staphylococci, Bacillus coli
8.6	—	2	2	—	Streptococci, Bacillus coli
9.0+	+	4	4	+	Streptococci, staphylococci, Salmonella ammoniae
9.0+	+	—	2	+	Streptococci, Bacillus coli, Salmonella ammoniae
9.0+	+	—	—	+	Streptococci, Bacillus coli, Salmonella ammoniae
9.0+	+	—	—	+	Bacillus coli, Salmonella ammoniae
9.0+	—	—	—	+	Salmonella ammoniae
9.0+	—	—	—	+	Gram-positive diplococci, Salmonella ammoniae
9.0+	—	—	—	+	Streptococci, Bacillus coli, Salmonella ammoniae

ABSTRACT OF DISCUSSION

DR. GEORGE GILBERT SMITH, Boston: I have met a number of these cases. They are very obstinate and very confusing. The diagnosis is not easy to make. I have seen some cases in which the lesion so closely resembled carcinoma that it was almost impossible to decide whether the case was one of malignancy or of incrusted cystitis. I think Dr. Hager's work will be very valuable in enabling us to do something in these cases in the future, and we shall be able to apply the therapeutic test more quickly, so that we can come to a decision as to the diagnosis.

DR. A. L. CHUTE, Boston: Dr. Hager has put on a firm basis those conditions that we used to speak of as infections with urea-splitting organisms. I wonder whether those cases following childbirth, in which there is a sloughing of the whole vesical mucosa, which is passed later as a cast, if the patient survives, do not belong to that type of infection. These patients always present an intense alkaline infection of their bladders which, in combination with the trauma that so often accompanies confinement and the retention that follows it, leads to a sloughing of the whole mucosa and its separation from the muscular coats. I saw a patient of this sort, some years ago; it was some weeks after she had passed the slough, and her bladder was nothing but a hollow scar. The condition was the same some years later when I last saw her again. I wonder whether this infection may not be with the same organism Dr. Hager describes.

Fig. 2.—Rabbit 8: 1 c.c. of a 1: 1,000 alcoholic solution of salicylic acid injected into the bladder, followed five days later by the injection of 1 c.c. of a broth suspension of Salmonella ammoniae. Necropsy performed eighteen days later.

DR. B. A. THOMAS, Philadelphia: I have been accustomed to think of two types of incrusted cystitis: the usual type, in which the incrustations surmount the surface of tumors and ulcers, and another type, in which the whole interior of the bladder is incrusted, like an egg shell. To my mind this is the most classic type of incrusted bladder one can imagine. It occurred in one case under unusual circumstances, particularly so far as the subject of etiology is concerned. The patient was a boy, aged 13, and weighed 69 pounds (31 kg.). He was sent to me for stone in the bladder, with request for immediate operation. The bladder was opened, and a typical egg shell lining was found. The incrustation could not be pulled off without pulling off the mucous membrane. The whole interior of the bladder was incrusted. The urine was clear, alkaline in reaction most of the time, occasionally neutral, and occasionally acid. Culture showed *Bacillus proteus-vulgaris*. I was much interested in the case from the etiologic standpoint, because of the fact that the boy's father had died of tuberculosis a few years before, and I was anxious to see whether there was any relationship. The crusts were made up of a salt of calcium. I had the urine examined repeatedly for tubercle bacilli, but the examinations were negative and we could not clinch that suspected causation at that time. In this connection I think the great value of injections into the bladder of cultures of Bulgarian bacilli in the treatment of these cases should be remembered. At the time of operation it was impossible to remove all the crusts, but within two weeks after the injection of cultures of Bulgarian bacilli, followed by a single irrigation of 1: 20,000 mercuric chlorid, the bladder was entirely cleared of the crusts, and remained clear for eight years, when the patient died. He had grown to manhood and had gained 64 pounds (29 kg.) in eight years. A few months before death his physician found tenderness in the lumbar region and discovered a psoas abscess, from which they isolated the tubercle bacillus by smear and guinea-pig inoculations.

DR. ROBERT V. DAY, Los Angeles: One possible mistake is to say that incrusted cystitis is always due to the same organism. We should say it is due to an enzyme; namely, urease, produced by bacterial growth or bacteriolysis. Doubtless these ureases produced by different organisms are not all exactly alike any more than trypsin, pepsin or papain are all exactly alike. Yet all split up proteins. Likewise ptyalin, amylopsin and taka-diastase all have similar actions, and doubtless the presence of similar enzymes could be found widely spread throughout the vegetable kingdom. Rosenow's work has proved that certain strains of streptococci produce a urease, and we find this frequently clinically. In other words, any organism that produces an enzyme resulting in ammoniacal urine is capable under certain conditions of producing an incrusted cystitis. Aside from relief of stasis and obstruction by drainage and otherwise, we have only one specific, namely, one of the silver salts, which act by fixing the ammonia in a double salt with the silver as fast as it is formed. Other metallic salts and oxids, to a certain extent, have the same tendency. For example, ammoniated mercury is formed very readily, and even manganese oxid to some extent fixes ammonia; but, in actual practice, only silver salts are efficient. I could never procure any results from the method suggested by Caulk of introducing the Bulgarian bacillus in lactose solution. The obvious reason was that the patient's bladder was so irritable that the solution could seldom be retained more than one-half hour. Of course, the formation of lactic acid is slow, and to obtain any appreciable acidity, its presence for many hours would be necessary. Moreover, ammoniacal urine is sometimes formed in the kidney pelvis.

DR. B. H. HAGER, Madison, Wis.: I have not seen any acute fulminating forms of incrusted cystitis. The cases that I have been dealing with have all been chronic, but it is quite likely that the acute forms do occur, for we know how rapidly the incrustations reform after they have been removed by curettement. Dr. Thomas' case was very interesting, but I think we must regard the incrustations in his case as different from those occurring with alkaline incrusted cystitis. Here we have an extremely irritable bladder, which bleeds easily with a high ammonia concentration of the bladder urine and incrustations which are chiefly phosphates. I agree with Dr. Day. We must consider that there are other forms of incrustations occurring in the bladder which are apparently quite different from those of alkaline incrusted cystitis. As we have been able to isolate this specific type of bacillus in three cases under intensive study, and seven at random, I believe that it is a very important organism in the production of this condition.

MANIPULATIVE (CHIROPRACTIC) DISLOCATIONS OF THE ATLAS*

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Unintelligent manipulations of the structures of the region of the upper cervical spine may result in undesired sequelae, such as have occurred in the three cases here presented. A forward dislocation of the atlas on the axis has been a consequence in each of the cases, one with fracture of the odontoid process; all of the cases were apparently the result of chiropractic treatments. One of them resulted in death, the second in constant dull pain and limitation of motion, with a material loss in efficiency of the patient, while the third appears to be progressing satisfactorily in spite of the dislocation of the atlanto-axial joint, although there is a marked reduction in the movements of the head.

ANATOMIC CONSIDERATIONS

The articulation of the atlas with the axis is a joint of complicated nature, as it is made up of four distinct parts or joints. These are: (1) a pivot articulation between the odontoid process of the axis and the posterior surface of the anterior arch of the atlas, called the atlanto-odontoid joint of Cruveilhier; (2) a sliding joint between the posterior surface of the odontoid process and the interior surface of the transverse ligament, called the syndesmo-odontoid joint; and (3 and 4) two gliding joints between the right and left articular processes. The two bones are connected by ligaments; namely, the anterior and posterior atlanto-axial, the right and left capsular and the ligamentum transversum atlantis. Four synovial membranes are located between the two bones, two in the joints formed by the odontoid process and two inside the capsular ligaments. All these structures provide facilities for rotation of the atlas on the axis, and, with it, the head. Lying posterior to the odontoid process and the transverse ligament, and anterior to the posterior arch of the atlas and the laminae of the axis, is the spinal cord with its meningeal coverings. On the integrity of the ligaments just described depends the maintenance of the proper position of these two bones in the formation of the neural canal, and it will be readily seen that any loss of these ligamentous supports, as, for example, a rupture, will result in a dislocation and consequent compression of the spinal cord. It is also evident that the bony processes concerned with this particular joint do not provide much material support against violence and, as the ligaments themselves are of exceedingly small bulk and length, they cannot stretch or lengthen sufficiently to overcome much tension. Therefore, they will of necessity yield by rupture only, thus permitting the atlas to slide forward on the axis, with a resulting cord compression.

The articulation of the atlas with the base of the skull (the articulatio atlanto-occipitalis) is likewise a relatively weak joint as to bony relations, but its ligamentous support is very much greater than is the case in the atlanto-axial joint. The flattened articular surfaces themselves offer very little resistance to forward or backward forces, but the occipito-axial and the three odontoid (or check) ligaments, together with the support offered by the ligamentum nuchae, provide an ample resistance to disarticulating stresses. The anatomist Gray tells us that "dislocation of the occiput from the atlas has only been recorded in one or two cases; but dislocation of the atlas from the axis, with rupture of the transverse ligament, is much more common; it is the mode in which death is produced in many cases of execution by hanging. Occipito-atloid dislocation is certainly fatal. Recoveries are on record after atlo-axoid dislocation. Immediate death occurs if the transverse ligament is torn or the odontoid process is broken." (An exception to the last statement can be made based on the first case of this series, in which death occurred many months after the injury.) The mechanical details of the joints under consideration are such that a backward displacement of the atlas on the axis is hardly possible. It might occur as a result of an extreme violence producing hyperextension of the head, such as a severe lifting force under the chin, causing an overextension of the head and rupture of the anterior ligaments whereby the anterior arch of the atlas will slip over the top of the odontoid process, if the latter is not broken. A transverse fracture of the odontoid process at its base will permit either a forward or backward dislocation of the atlas even if the transverse ligament of the atlas remains intact.

In all the instances detailed, the important point is the resulting compression of the spinal cord and its coverings and the efferent and afferent nerve structures of the region, as well as the associated blood vessels. In a forward dislocation of the atlas on the axis, there may also occur an interference with the free passage of blood through the verterbral arteries as they pass through the foramena in the transverse processes of the atlas. Interference with the venous flow will also occur in this injury, and the amount of obstruction due to pressure of the bony parts will depend largely on the degree of dislocation, which may be so slight as to result in no disability, as is evident in one of the cases included in this presentation (Case 3).

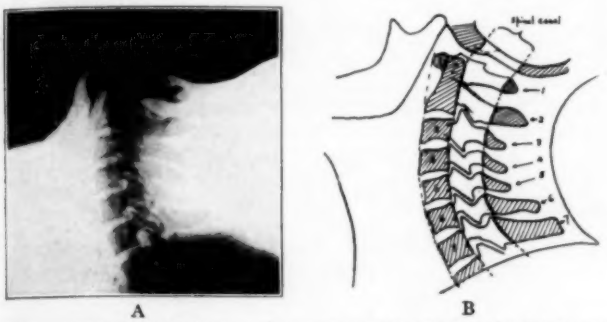
ROENTGEN-RAY ANALYSIS

The demonstration of this lesion is best accomplished by projections of the craniocervical region, with the patient in the lateral recumbent posture. The binocular shadow visualization of the bones and joints of the region is preferable to the two dimension shadows of the single film. The patient's head should be so placed that its sagittal plane is parallel to the plane of the roentgen-ray film, thus bringing it in direct alinement with the long axis of the spine, the weight of the body resting on the lateral aspect of the nether shoulder. This can be accomplished by use of a hard pillow or block of suitable thickness on which the film casette is laid. An anteroposterior projection is also of value in the determination of this lesion, particularly for demonstration of lateral displacement of the involved bones. This view is not easy to produce, owing to the fact that on direct anteroposterior roentgen-ray projection, the atlas and part of the axis are covered by the shadows of the occipital bone or those of the body of the inferior maxilla, or both. The patient is placed in a supine posture; the mouth is opened to the maximum extent and is kept so by means of a cork or other roentgen-ray transparent material placed between the teeth. The central axis of the roentgen-ray beam is directed to pass through the center of the mouth, to emerge just below the lowest point of the occiput. The

* Read before the meeting on radiology in the Section on Miscellaneous Topics at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

resulting shadows will show the atlas, the odontoid process and the body of the axis free from superimposing shadows and will permit a reading of certainty, as to the minute relationship of the osseous structures in the region under study.

The lateral view in the normal presents the shadow characteristic shown in Figure 1 *A*, in which particular note should be made of the position of the shadow of the anterior arch of the atlas in relation to the shadow of the odontoid process, these being in close apposition



A B

Fig. 1.—*A*, lateral projection of normal occipito-atlanto-axial joints and cervical spine; the relation of the atlas to the odontoid process of the axis and the formation of the neural canal may be noted. *B*, diagram of roentgen-ray shadow outlines.

with each other. The foramen magnum of the skull fits exactly over the space behind the shadow of the odontoid process and in front of the shadow of the posterior arch of the atlas. All the bodies of the cervical vertebrae are found to be in line with one another, when normal, being so arranged that a convexity forward makes an even curve, which is a continuous one. A line drawn on the roentgen-ray film starting from the anterior edge of the atlas will connect all the anterior margins of the cervical vertebrae in an uninterrupted line, as advocated by A. W. George, while a similar line, if drawn on the posterior surface of the odontoid process downward, will also present an uninterrupted curved line connecting all the vertebral bodies. This line indicates the anterior margin of the spinal cord. This is illustrated in diagram form in Figure 1 *B*. In the normal, the shadow of the angle of the jaw always lies close to the anterior edge of the cervical bodies, when the head is held in the normal position. The roentgen-ray shadows of the normal, resulting from the technic here described for an anteroposterior projection through the open mouth, will show an even spacing of the two lateral masses of the atlas with the odontoid process between. In dislocations of the upper cervical vertebrae, these relations are disturbed according to the degree of lateral luxation present. Usually the shadow of the angle of the jaw will be found much farther away from the cervical vertebrae than in the normal, a wide space being apparent, which is often the first clue to the forward dislocation. The degree of compression of the structures in the neural canal can be estimated on this view by inking in the limits of the spinal cord on the roentgen-ray film, as previously suggested.

REPORT OF CASES

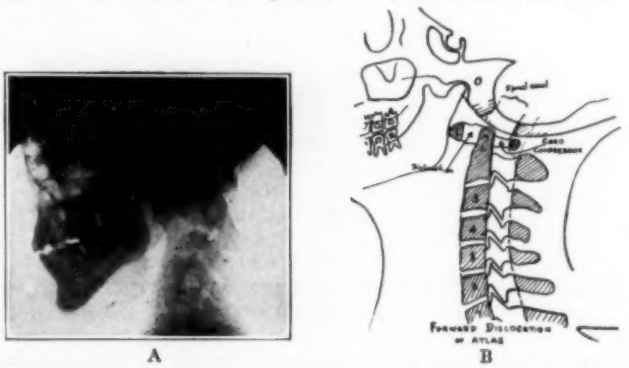
CASE 1.—*History.*—F. M., a man, aged 18, a day laborer, brought to the Cook County Hospital, Dec. 28, 1917, complained of pain in the heart, pain in the neck, inability to move his head, and weakness and numbness of the hands. In the summer of 1917, he had a good deal of pain in his back and in the chest, for which he consulted a chiropractor for relief. He was given several chiropractic treatments. The treatment, as described by the patient, consisted of punching and rubbing the back up to the base of the skull while the patient was lying prone on a table, followed by a manipulation of the head, the patient being in supine posture with the head drawn over one end of the table. In manipulating the head, the chiropractor held it with both hands and forced it violently in all directions over the edge of the table. During the course of one of these treatments he felt his neck "snap," and experienced severe pain. He called the attention of the chiropractor to this and was informed that that was part of the treatment and that the snap proved that there was "a faulty position of the seventh [sic] vertebra, which," said the chiropractor, "I now have put back in proper place and the pressure on the nerves, which was making you sick, is now taken off and you'll get well" (patient's statement). However, the patient suffered so much pain that after several more visits he refused to go on with the treatments. He found that, although he had full motion of the head previous to these treatments, he now could not move it without pain, and there was limited motion. The pain got so bad that he could not work and had to spend much of his time in bed. Being without funds, he went the rounds of dispensaries and clinics of Chicago seeking help and finally was taken to the County Hospital.

The patient reported that he had measles and scarlet fever, when a child, and had had attacks of "rheumatism." Four years before, his tonsils and adenoids were removed, and three years before he was told that he had a "heart lesion."

Inquiry was made in an attempt to elicit any previous injuries to the head or neck that would be in accord with the roentgen-ray findings, but no such history was obtained, the patient insisting that his head and neck were perfectly normal prior to the spine treatments.

Physical Examination.—The patient was fairly well nourished; he lay quietly in bed without moving his head. This was held rigidly in extension, and there was a prominence in the neck below the occiput which was very tender to pressure, resulting in a feeling "like an electric shock." He was found to have definite signs of a cardiac lesion, the details of which are not pertinent in this presentation and, therefore, are omitted.

Roentgen-Ray Analysis.—A roentgen-ray examination of the cervical spine and adjacent regions revealed a forward dislocation of the atlas on the axis, with a fracture of the odontoid process, the fragment being carried forward with the atlas



A B

Fig. 2 (Case 1).—*A*, roentgen-ray shadow of original examination, showing the forward dislocation of the atlas on the axis; *B*, tracing diagram.

(Fig. 2 *A*). In all probability the transverse ligament of the atlas remained intact. The degree of dislocation was extreme, and it was difficult to understand why a greater degree of interference with the spinal cord has not resulted. A roentgen-ray study of the thorax revealed an abnormal median shadow, the configuration of which was similar to that usually found in pericarditis with effusion, in that its outline was distinctly bilateral and of "water bottle" or "gourd" shape, with a relatively normal sized aorta. (This configuration is also found in some cases of right auricular dilatations, as in mitral valve lesions.) Both cardiophrenic angles were acute and, therefore, clear. Both pulmonary fields presented normal roentgen-

ray transparencies with clear pleural margins; the costophrenic angles were normal.

It is obvious that this patient, prior to having had his spine "adjusted," was suffering from a heart lesion, which was found by an internist to be "mitral stenosis and regurgitation." He complained of no trouble in his neck. The chiropractor, therefore, presumably assumed that the sharp stabbing pain in this man's chest, which he complained of and sought relief from, was caused by a "misplaced seventh cervical vertebra

Fig. 3 (Case 2).—Forward dislocation of the atlas on the axis.

impinging on a nerve" and proceeded to relieve the pressure my manipulating the spine. In the course of his "putting the displaced vertebra back in place" he, by violent force, actually dislocated the atlas forward on the axis and fractured the odontoid process, as shown by the roentgen-ray shadows (Fig. 2 *B*) and the subsequent course of the case.

Subsequent Course.—This patient was treated in the orthopedic section by Dr. Charles A. Parker, who put on the patient a plaster collar and suspended his head with a jury-mast, thus relieving the pressure on the spinal cord. He improved very slowly and was made an ambulatory case. Unfortunately, his friends and neighbors interfered because they did not like the appearance of the appliance and they cut off the collar. It was not long after this that he returned to the hospital (October, 1918) in a worse condition than ever, having become bedfast because of a slowly increasing paralysis of the limbs. Day by day the paralysis progressed, and he died in March, 1919, nearly two years after the injury. The necropsy report confirmed the roentgen-ray findings and included such items as the following: obliterative chronic fibrous pericarditis, chronic fibrous myocarditis, old traumatic fracture of the second cervical vertebra and an old forward dislocation of the atlas, with pressure on meninges of the upper end of the spinal cord, edema and spinal pachymeningitis and local necrosis of the cord.

CASE 2.—*History.*—M. G., a man, aged 29, referred to us by Dr. M. S. Coffler, May 17, 1922, had complained of a "pressing" pain under the sternum, heart pounding and swelling of the ankles. He had been under the care of a chiropractor, who gave him several treatments for a "misplaced sixth (?) cervical vertebra." During the last treatment he felt a sudden sharp pain in his neck and told the chiropractor that it hurt too much to continue. He found that his neck was not only painful but was stiff, and so did not return for more "replacements." Seeking relief, he applied to Dr. Coffler, who found some limitation of motion of the head and a prominence below the occiput, which was painful to pressure; there were signs of a heart lesion. He was referred to me for roentgen-ray study of the neck. The man reported that at no time did he have an injury to the head or neck that would account for the subsequent roentgen-ray findings.

Roentgen-Ray Analysis.—The shadows on lateral projection revealed a forward dislocation of the atlas, indicating a probable 30 per cent. reduction in the neural space between the odontoid process and the posterior arch of the atlas. All other bones and joints of the region were normal. A compression of the cord and its coverings was indicated by the roentgen-ray evidence, although there were no other definite signs of cord pressure.

On being informed of the roentgen-ray findings, the patient arose from his chair and astonished the physician by stating: "Then the chiropractor was right when he told me that I have a displaced vertebra in my neck. He's the only one who diagnosed it correctly, and he is giving me a square deal, so I'm going back to him," and he walked out. Several attempts to reach this man have not been successful, so the subsequent developments cannot be reported at this time. From the roentgen-ray evidence, together with the symptoms in the case, it is obvious that this man received a dislocation of the atlas at the hands of the chiropractor.

Speculation as to the future course of this man's condition suggests that sooner or later there will develop signs of a paralysis of greater or less degree, as there is very little probability of a successful reduction of the dislocated atlas. Whether the tissues of the cord can tolerate indefinitely the pressure caused by such a lesion is questionable.

CASE 3.—*History.*—F. G., a boy, aged 6, was referred to me by Dr. G. H. Miller, May 31, 1923, to determine the cause of stiffness in the neck and limitation of motion. There was a history of having fallen off his velocipede and hurting the dorso lumbar spine. A few days later the boy still complained of pain in his chest and back, but not of his neck. He was taken to an uncle, who was a chiropractor, and a "spinal adjustment" in the cervical region was made, after which the stiffness in the neck developed. The boy was then seen to hold his head at an angle to the spine. As the condition did not improve, the mother took him to Dr. Miller, who referred him for roentgen-ray investigation of the cervical spine and base of the skull.

Fig. 4 (Case 3).—Forward dislocation of the atlas on the axis.

Roentgen-Ray Analysis.—A forward dislocation of the atlas on the axis is evidenced by the shadows of the lateral view (Fig. 4). The spinal cord space is reduced almost one half the normal size, which is conclusive evidence of some impingement of the cord. The remaining vertebrae are normal from the roentgen-ray point of view.

As the boy showed no signs of cord pressure, nothing was done in the way of reduction of the dislocation. His stiffness moderated, and the limitation of head rotation decreased. I

made a reexamination of this boy, March 11, 1925, and his dislocation was still as was found on the first observation. He is of a bright and cheerful disposition and does not mind in the least his dislocation. Thus it seems that nature may overcome unnatural conditions such as this one, probably by some manner of accommodation to the new situation, with no apparent interference with the general well being of the individual.

COMMENT

Evidence is presented of dislocations apparently produced by the chiropractors through their so-called spinal adjustments or replacements to relieve supposed pressure on a nerve. On accidentally producing the dislocation described in one of the cases, the claim was made that the "snap" felt by the patient indicated the slipping back of the dislocated vertebra! To treat a heart lesion resulting from acute exanthems, inflammatory joint disease, etc., by replacing the nonexisting dislocated vertebra, claimed to cause the abnormal condition, is preposterous. So long as the laws governing the health of the individual permit such methods as the chiropractic system to be practiced and thus fail to protect an unsuspecting public, just so long will occurrences such as are detailed in this presentation take place. Another case in point that received considerable newspaper notice in the Chicago papers in February, 1923, may be cited. A girl, aged 11, with a tuberculous caries of an upper cervical vertebra was taken to a chiropractic school by her parents; there the students gave her "spinal adjustments" that resulted in a cord injury due to collapse of the diseased bone. Her death followed immediately after this unintelligent, nonscientific and essentially criminal manipulation.

As this is being written, an additional case comes to my notice. It concerns a child, aged 5, who had bronchial pneumonia. The chiropractor to whom she was taken placed the child face downward on two tables separated about eight inches and began manipulating the child's spine; when he came to the portion unsupported by the two tables (he is said to have used great force), the child cried out with pain and died. At the coroner's inquest, it was found that death resulted from the chiropractor's treatment.

ABSTRACT OF DISCUSSION

DR. I. S. TROSTLER, Chicago: I want to report two similar cases to the first three that Dr. Blaine mentioned; one in a highly intelligent woman of 40, the wife of the president of an insurance company, who ought to know better than to send his wife to a chiropractor, but apparently did not. She had a fracture dislocation of the first and second cervical vertebrae with marked deformity but very little paralysis. She is getting along comfortably now after having worn a jury mast for three or four years. I had another case in a man, about 55, an insurance agent and a very intelligent man, who had a student chiropractor attempt to relieve his headache while sitting in a barber chair. He was put in a jury mast, and is quite comfortable. This case was directly the means of defeating the chiropractic bill in Illinois four years ago.

DR. B. F. BUZBY, Philadelphia: I saw a patient last fall with the following history: The child had had her tonsils removed in September. Three days afterward she went home holding her head to one side and complaining of a good deal of pain in her neck. She went back to the laryngologist, who gave her a liniment to rub on her neck. That did not seem to satisfy her parents, so they went to a chiropractor, who gave her treatments for about two months. I saw her four months following the removal of her tonsils. Roentgenograms showed a forward dislocation of the atlas with no damage to the odontoid process. She had no symptoms of paralysis. She held her head in a position of right torticollis and was exquisitely tender at the base of the occiput on the right. I attempted under deep ether narcosis to relieve this luxation, but without any benefit. Two days later, I put on a plaster-of-Paris collar with the torticollis overcorrected and renewed it after three months. I substituted for the second collar a Thomas leather collar reinforced with steel after a second period of two months. The child now holds her head erect without any pain or tenderness, and has practically full motion. However, the dislocation is still present, and she wears the Thomas support most of the time.

DR. EDWARD S. BLAINE, Chicago: Since writing this paper I have learned of at least four other cases of similar nature. These give the same story—chiropractic treatment or adjustment of supposed dislocated vertebrae, sudden pain during rolling of the neck over the edge of a table, and roentgen-ray proof that what has actually occurred is a dislocation produced by improper manipulation.

HYPODERMIC DIGITALIS PREPARATIONS *

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The intravenous administration of digitalis preparations has been recommended because of certain advantages claimed for this method of giving the drug. It has been considered that:

1. The digitalis effects would be produced more quickly because the time needed for absorption from the gastro-intestinal tract would be eliminated.
2. The digitalis effects would be more certain, because of avoiding the variable absorption from the gastro-intestinal tract.
3. Because of these things, a smaller dose would be needed to obtain effects.

In the course of using these products in the treatment of patients with cardiac decompensation, it became plain to me that the manufacturers' claims as to potency, and particularly their recommendations as to dosage, were far from correct. It has never been properly demonstrated that any of these supposed advantages of the intravenous use of digitalis are actual facts, and so it seemed advisable to investigate the activity of these preparations. It seemed especially important because they are commonly and widely used in the most severe cases and in emergencies, when the difference between a sufficient and an insufficient dose might be vital to the patient.

To test the preparations by animal experiment might give an indication of the relative strength of their activity, but we do not know exactly how to transfer the effect on the animal to a human intravenous dosage. Moreover, the promptness of action on the human heart after injection can be ascertained only by experiments on the human being, so it seemed best to do the whole work with the human heart, using the change in the T wave of the electrocardiogram as an indicator of digitalis activity and also the slowing of the rate of a previously untreated auricular fibrillation. These two are the earliest digitalis effects to appear after the administration of a sufficient dose of the drug, and the use of the T wave change as a method of testing various tinctures of digitalis has been recently reported on.[1]

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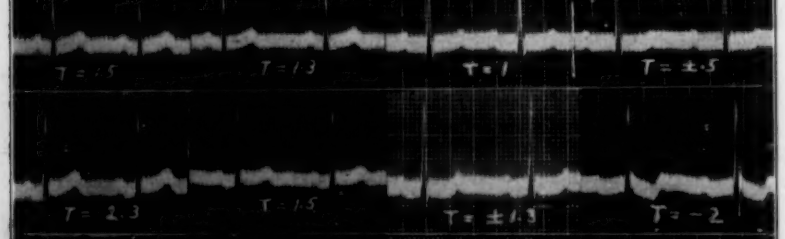
* From the medical services of the New York Hospital.
* Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Pardee, H. E. B.: The Standardization of Digitalis by Its Action on the Human Heart, J. A. M. A. **81**: 186 (July 21) 1923.

Under the influence of the drug, the amplitude of the T wave diminishes in one or more leads of the electrocardiogram, as seen in the accompanying illustration. As more digitalis is taken or as the effect of a large dose increases hour by hour, the T wave may come to be turned downward in one or more leads. I have used as a measure of the potency of a digitalis preparation the smallest dose that will diminish the amplitude of the T wave, calling this the T wave unit. I have expressed this dose in fractions of a minim per pound of the patient's weight, because Eggleston's [2] demonstration of the relation of body weight to digitalis dosage has been well proved by experience. It was found that the clinical activity of the different tinctures tested was inversely proportional to the size of the dose that would affect the T wave. Less of the more potent tinctures would be needed than of the weaker ones.[1]

At present I wish to report on the testing of digifolin Ciba, the digitan ampules of Merck, digalen (Cloetta) and the Burroughs Wellcome tablets of amorphous digitalin.

Table 1 shows the results with these preparations, the results with the samples of the tincture previously tested being included for comparison. The minimal effective dose—the T wave unit—for different tinctures, by mouth, varied from 0.20 minim per pound for the strongest to 0.30 minim per pound for the weakest, with an average of 0.25 minim. Intravenously the T wave unit for digifolin was 0.30 minim per pound; for digitan solution it was 0.25 minim per pound; for digalen it was 0.3 minim per pound, and for the Burroughs Wellcome amorphous digitalin it was 1/100 grain per 70 pounds.



Record of typical experiment: *A*, control record of a patient weighing 115 pounds, with duodenal ulcer; Leads 1, 2 and 3 from above downward. *B*, record eight hours after 105 minims (7 c.c.) of digitan solution intravenously. *C*, record three days later after an additional 150 minims of tincture of digitalis by mouth. *D*, record taken six days after *A*, the patient having had 300 minims of tincture of digitalis by mouth. The figures given for the height of T are the averages of several estimations for each lead. One may note the slight diminution in the height of T in record *B*, the inversion of T in Lead 3 of record *C*, with sinking of the S-T interval and in record *D*, the frank inversion of T in Leads 2 and 3.

TABLE 1.—*Results of Tests* *

Different samples of tincture of digitalis by mouth.	0.20 to 0.30 minim.
Digifolin intravenously	0.30 minim
Digitan solution intravenously	0.25 minim
Digalen intravenously	0.30 minim
Tablets of digitalin, B. W. & Co., intravenously	1/100 grain per 70 lbs.

* Amount to produce slightest effect on T wave of electrocardiogram. In this table and in Table 2, potency is expressed in minims per pound of patient's weight.

2. Eggleston, Cary: Digitalis Dosage, Arch. Int. Med. **16**: 1 (July) 1915.

The minimal effective dose of each of these preparations was found to be much larger than suggested by the manufacturer for the therapeutic dose, so much larger that if the printed suggestions as to dosage were followed the patient would certainly fail to receive an effective dose, and so to benefit from the medication.

TABLE 2.—*Results Obtained by Clarke*

Different samples tincture of digitalis by mouth (Eggleston)	1.7 to 3.8 minims average 2.2 minims
Digifolin by mouth (Clarke)	1.4 to 4.4 minims average 3.56 minims
Digifolin intramuscularly (Clarke)	1.8 to 2.8 minims average 3.0 minims
Digifolin intravenously (Clarke)	2.0 to 2.7 minims average 2.36 minims

In the case of tincture of digitalis by mouth it has been found that the full therapeutic dose was from eight to ten times the minimal effective dose as determined by the T wave change. I do not believe it is ever proper to give the full calculated therapeutic dose of a digitalis preparation at one time, because of the likelihood of producing a considerable degree of poisoning in some susceptible patients. One half of this amount by mouth, four or five times the minimal effective dose, is safe, however, and will produce definite digitalis effects.

From this and from the facts of Table 1, it appears that the initial dose of these intravenous preparations for a patient who has had no digitalis previously should be four times the minimal effective dose as here determined. This works out to about 1 minim per pound of the liquid preparations, slightly more for the digifolin and digalen than for digitan, and 4/100 grain of the digitalin per 70 pounds, which would be eight of the 1/100 grain tablets for a patient of 150 pounds.

Digifolin has been investigated by Clarke of Ann Arbor by a different method. Table 2 summarizes his results. He gave 5 c.c. doses every twelve hours by mouth, intramuscularly, or intravenously, until a marked therapeutic or minor toxic effect appeared. He found that the total amount of the drug to produce these effects by intravenous administration varied from 2 minims per pound to 2.7 minims, averaging 2.36 minims. This is seen to be about eight times the minimal effective dose I have found for intravenous administration by the T wave method. By intramuscular injection, Clarke found that the average full therapeutic dose of digifolin was 3 minims per pound, slightly more than needed intravenously; while by mouth it was 3.56 minims per pound, which is twelve times the amount producing the minimal T wave change when given intravenously.

These figures for total dosage of digifolin are in agreement with those I have obtained for partial dosage of this preparation, so it seems still more certain that this one at least, if not all of these intravenous preparations, must be given in much larger amounts than has been the custom when it is desired to obtain prompt therapeutic effects. Doses of the size here recommended, from 90 to 160 minims (6 to 11 c.c.) of the liquid preparations, have been given *to previously untreated patients* in the course of these experiments without unpleasant effects.

It is always necessary, when suggesting large doses of any digitalis preparation, to emphasize the need of making certain that the patient has not been receiving digitalis in any form during the previous two weeks. The drug is sometimes so slowly eliminated that a patient may retain an unexpectedly large proportion of a previous dose, and the additional effect of the later dose may cause unpleasant toxic symptoms. The doses here recommended are only for patients who have not had any digitalis within the previous two weeks. For patients who are under the influence of digtalis at the time, the dose should be reduced to one quarter or one half of that recommended, to from 30 to 60 minims, depending on our estimate of the degree of the patient's previous digitalis saturation. This reduced dose should be repeated at six hour intervals if needed, and perhaps one should reduce it further each time, making certain before each dose that no signs of a digitalis effect have made their appearance.

The second claim for intravenous medication, its greater promptness of action, I have not yet fully investigated, but the facts so far are as follows:

1. With the minimal effective dose or a dose but slightly larger, the T wave and the rate with untreated auricular fibrillation are not affected until from five to ten hours after intravenous administration.

2. After doses of the tincture by mouth equal to 1 minim per pound or more, the T wave and the rate with untreated auricular fibrillation may be affected as early as the second hour, and the effect reaches its maximum about the sixth or seventh hour.[1]

3. After rectal administration of digitalis in doses larger than 1 minim per pound [3] (proportion not stated by the investigator) the T wave was affected on the average in two and one-half hours.

Further observations are needed to settle this question. The facts just noted make it seem likely that the promptness of action is more dependent on a mass effect of digitalis—the large size of the dose—than on the greater promptness with which the drug comes in contact with the heart muscle after intravenous administration.

We must not rely then on minimal intravenous doses when in need of a prompt effect, though it is possible that somewhat smaller doses are needed by vein than by mouth. This matter is being further investigated.

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3. Levy, R.: Rectal Digitalis Therapy. Arch. Int. Med. **33**: 742 (June) 1924.

Bacteriology of "Colds."—Little is definitely known about the bacteria causing the common colds. Undoubtedly, the term "cold" is used for a variety of affections etiologically distinct. Pneumococci and streptococci, as well as the influenza bacillus and even the tubercle bacillus, may be responsible for the train of symptoms to which the name "cold" is popularly applied. Colds are apparently largely spread by close personal contact and by the infectious droplets discharged in sneezing and coughing. Whether certain micro-organisms are more commonly concerned in the production of colds than others is quite uncertain. Some specific organisms have been implicated. An anaerobic organism has been found in some series of cases of acute and chronic rhinitis and has given rise to rhinitis when introduced experimentally into the nose of a healthy person. Specific antibodies are present in the serums of persons infected experimentally and of those suffering from a natural infection with this bacillus.—Jordan, E. O.: General Bacteriology, Ed. 8, Philadelphia, W. B. Saunders Company, 1924.

NONSYPHILITIC AORTITIS *

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Aortitis, an inflammatory condition of the aorta, has been recognized as a clinical and pathologic entity for many years. From the purely pathologic standpoint, it has been described so frequently and in such detail that the picture seems complete. This refers especially to the literature of fifteen or twenty years ago, and to a few recent reports. A striking commentary is the comparative scarcity of references in the American and English literature. Very early references are those of Aretaeus [1] and Morgagni,[2] and later of Scarpa.[3] The more modern work dates from the report of Portal,[4] in 1803, and Hodgson,[5] in 1815. Portal was the first to describe acute aortitis clinically; and, while there has remained no doubt that aortitis occurs as a pathologic fact, clinicians have been inclined to avoid positive statements, especially regarding early diagnosis. In fact, the feasibility of making an early diagnosis of aortitis remains a real question in the minds of some of our best medical men. This refers particularly to the nonsyphilitic variety. Aortitis of syphilitic etiology is well established, and one that is confirmed in daily practice. That other infections may play a similar rôle is equally evident, but this some deny and many others seem to forget.

That both acute and chronic aortitis not due to syphilis are not rare disease conditions is quite evident from only a partial review of the literature. While it is true that many of these reports are entirely clinical, a sufficient number include complete pathologic and bacteriologic studies. Excellent general discussions have been contributed by Satterthwaite,[6] Hirschfelder,[7] McCrae,[8] Pitt,[9] Brown,[10] Spiro [11] and others.

Evidence in support of the protean etiology of aortitis is to be found in the following abbreviated summary of this angle of the disease: Aortitis due to tuberculosis has been reported by Flexner [12] and von Zalka;[13] influenza, by Fiessinger,[14] Marmorstein,[15] Allbutt [16] and Oetiker;[17] typhoid fever, by Thayer,[18] Landouzy and Siredey,[19] and Marchiafava and Nazari;[20] streptococ-

* Read before the Section on Practice of Medicine at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Aretaeus: On the Causes and Symptoms of Acute Disease, London, 1856, Book II, p. 445 (trans. after Satterthwaite).
2. Morgagni: On the Seat and Causes of Disease **1**: 389 (trans. after Satterthwaite).
3. Scarpa: Reflections et observations anatomico-chirugicales, Paris, 1809, 1 (after Satterthwaite).
4. Portal: Cours d'anatomie médicale **3**: 144, 1803.
5. Hodgson, Joseph: Diseases of Arteries and Veins, London, 1815.
6. Satterthwaite, T. E.: Diseases of the Heart and Aorta, 1905.
7. Hirschfelder, A.: Diseases of the Heart and Aorta, 1913.
8. McCrae, T.: Dilatation of the Aorta, Am. J. M. Sc. **140**: 469-487, 1910.
9. Pitt, G. N., et al.: Discussion on the Etiology of the Degenerative Changes in the Aorta, Brit. M. J. **2**: 1063-1069, 1908.
10. Brown, G. E.: Acute Infectious Aortitis, with Report of Cases, Ann. Med. **1**: 254-265 (July) 1920.
11. Spiro, H.: Chronic Aortitis; a Brief Discussion of Its Clinical Signs and of the Usefulness of an Angle Finder during the Fluoroscopic Examination of the Thoracic Aorta, M. Clin. N. Am. **6**: 1587-1605 (May) 1923.
12. Flexner, S.: Bull. Johns Hopkins Hosp., 1891.
13. Von Zalka, E.: Zwei Fälle von Tuberkuloser Aortenperforation, Virchows Arch. f. path. Anat. **251**: 685-698, 1924.
14. Fiessinger, C.: Aortitis, Acute and Chronic, Med. Press. & Circ. **107**: 220, 1919.
15. Marmorstein, M.: Acute Grippe Aortitis; Case with Basilar Thrombosis, Med. Obozr. **68**: 577-601, 1907.
16. Allbutt, Clifford: Diseases of the Arteries **2**: 163.
17. Oetiker, L.: Ueber Akute Aortitis Besonders als Komplikation der chronischen Erkrankungen der Aorta, Schweiz. med. Wchnschr. **54**: 459-482 (May 15) 1924.
18. Thayer, W. S.: On the Late Effects of Typhoid Fever on the Heart and Blood Vessels, Am. J. M. Sc. **127**: 391, 1904.
19. Landouzy, L., and Siredey, A.: Etude des localizations angiocardiques typhoidiques, leurs consequences immédiate prochaines et éloignées, Rev. méd. **7**: 804-919, 1887.
20. Marchiafava, E., and Nazari, A.: La malattia di Take Jonnesco (aortite ulcerosa tifica), Policlinico (sez. med) **30**: 1-7 (Jan.) 1923.

cus infection, by McCutcheon[21] and Koritschoner;[22] pneumococcus infection, by D'Antona;[23] gout, by Mougeot,[24] and rheumatic fever, by McCrae,[5] Navarro[25] and Luzzatto.[26] Rheumatic fever seems worthy of special mention as it plays such an important rôle in cardiovascular infections, and it is interesting to note that Klotz has observed small areas of sclerosis with cellular infiltration in the adventitia and media of arteries in cases of this disease. These areas bear some resemblance to the Aschoff bodies found in the heart. Recently, Oetiker[17] conducted a bacteriologic study in twenty-three cases, and he was able to isolate an organism in twenty cases. He found streptococci, staphylococci, pneumococci, influenza bacilli and, in one case, anthrax bacilli.

After reading the comparatively scanty literature and noting with surprise the lack of attention given to the subject in standard textbooks, I was still somewhat hesitant to discuss again what should be a familiar and well understood disease. However, I have observed acute and chronic nonsyphilitic aortitis so frequently, usually after being classed as some other condition, that I feel justified in this presentation. It offers the opportunity to emphasize that many of the cases are of nonsyphiltic etiology; that aortic disease is much more common than generally supposed; that early diagnosis can and should be made, and that more attention should be given to the aorta in our routine examinations. It is to be regarded as a not uncommon disease, commonly overlooked.

At this time it would seem wise to limit the discussion to that of the thoracic aorta, as it was this portion of the vessel which was affected in the series studied, and it is the portion usually involved. On the other hand, the abdominal aorta is also subject to similar inflammatory processes. The French recognize an "abdominal aortitis" (aortite abdominal aigue) as a clinical disease entity. As described by them, it is accompanied by angiospasm, with symptoms similar to those of angina pectoris in the chest.

THE AORTA

Certain special anatomic and physiologic characteristics of the aorta now present themselves for consideration. Like all arteries, it consists of three coats, intima, media and adventitia. The inner coat consists of a single layer of endothelium with a thin underlying layer of connective tissue stroma. The middle coat, or media, consists of connective tissue with varying amounts of smooth muscle fibers and elastic fibers. The outer coat, or adventitia, is essentially connective tissue, loosely arranged, and contains numerous nerve plexuses. Nutriment to the vessel wall is obtained either by imbibition through the endothelial cells from the blood in the lumen, or through the small vessels to the artery, the vasa vasorum. Infection may likewise follow either course. The aorta differs essentially from the other arteries of the body in that, in the latter, the media consists of a large proportion of muscle fibers. On the other hand, the aorta contains relatively few muscle fibers, but many elastic fibers. The difference in the structure of the aorta from the rest of the arterial system is due to the difference in the function of the two. The body contains only a limited quantity of blood, which must be distributed according to the ever-changing needs of the various systems. Thus, for example, the arteries of the splanchnic area must contract to supply the brain, or the arteries of the skin must contract to supply the intestines, and so on indefinitely. However, the aorta does not enter actively into this system of reciprocal supply. Therefore, it is poor in muscle tissue, but rich in elastic fibers, as it must dilate and immediately return to the normal, continuously. Probably no organ in the body bears the brunt of such constant lashing as the aorta. It must withstand the shock of each systole twenty-four hours every day, and in addition it must bear the burden of all excess activity. Little wonder, then, that this overworked artery seldom passes middle life without showing some damage, and that it is so frequently the site of acute or chronic infection.

Another fundamental consideration is the generally accepted fact that muscle and elastic fibers do not regenerate, in contradistinction to connective tissue. For this reason, infection and subsequent damage sufficient to destroy muscle and elastic fibers are not followed by regeneration but by fibroblastic proliferation. The contractility and elasticity of the aorta are thus lost, and dilatation becomes permanent. With this in mind, early diagnosis is of paramount importance.

PREDISPOSING FACTORS

The predilection of the ascending aorta and the arch for any type of infection has been clarified by the work of Klotz.[27] He has shown that the lymphatic supply of the aorta is not uniform; in certain areas the lymphatics are present in great numbers, while in other regions the distribution is meager. The ascending aorta appears to have lymphatics in common with the pericardium and also communications with a group of nodes that join the lymphatics of the anterior mediastinum. Around the arch of the aorta are found lymphatics supplying the aortic wall. These connect with nodes in the anterior mediastinum, with those around the trachea, and with those at its bifurcation. The descending aorta has a variable number of lymph nodes, particularly along its right border, which form a plexus around the exit of the intercostal arteries. This lymphatic system is in direct communication with the two large drainage beds of the body, the one in the thorax and the other in the abdomen.

Another predisposing factor, according to Westenhöfer,[28] is based on phylogenetic grounds. He believes that aortitis, like appendicitis, tuberculosis of the apex of the lungs and certain diseases of the pelvis of the kidney, originates on a phylogenetic basis. Aortic disease is seldom found in animals, and is directly associated with man's upright position. Like tuberculosis, this disease develops from childhood and becomes more pronounced with age because of the changing growth and position of the thorax and spinal column. In the case of the aorta, the relation between the thorax and the vertebral column becomes particularly unfavorable, because a certain disproportion takes place between the growth of the spinal column and that of the aorta. The former grows more rapidly than the aorta, which produces a displacement of the exits of the intercostal arteries, so that the original proportion between the

21. McCutcheon, M.: Acute Ulcerative Aortitis, Proc. Path. Soc. Philadelphia **23**: 96, 1920-1921.
22. Koritschoner, R.: Beitrag zur Kenntnis der myokotischen Aortitis, Centrabl. f. allg. Path. u. path. Anat. **23**: 100-106, 1912.
23. D'Antona, S.: Un Caso di Aortite Verrucosa Acuta, Policlinico (sez. med.) **19**: 262-273, 1912.
24. Mougeot, A.: De l'origine goutteuse, nonsyphilitique, de quelques cas d'aortite chronique, Progrès méd. **29**: 81, 1913.
25. Navarro, J. C.: Ectasia aortica de originereumatico, Semana méd. **24**: 604-609, 1917.
26. Luzzatto, A. M.: Sull aortite pneumococcica, Riv. Veneta di Sc. med. **53**: 49-71, 1910.
27. Klotz, O.: Some Points Respecting the Localization of Syphilis on the Aorta, Am. J. M. Sc. **155**: 92-100 (Jan.) 1918.
28. Westenhöfer: Ueber die Lokalisation und phylogenetische Grundlage der Verffetungen und Sklerosen der Aorta und ihrer Aesta, Deutsch med. Wchnschr. **48**: 518-520 (April) 1922.

parts is disturbed. A similar disturbance occurs within the spinal canal, between the spinal column and the spinal cord. Also, while in the animal the spinal column forms a softly curving posteriorly convexing arch, against which bone pressure is reduced to a minimum, the human spinal column in the upright position is convexing forward in its lower half. To this protruding, often very uneven, column, the aorta is to a certain extent attached. It is constantly pulled lengthwise and sidewise under the influence of the blood stream, while the posterior wall is to a certain extent squeezed between the blood stream and the spinal column. The greater the disproportion between the growth of the aorta and the spinal column, the narrower and the more stretched lengthwise the aorta becomes. But in spite of the phyletic disposition of the apex of the lungs or of the appendix, not everybody develops tuberculosis of the lungs or appendicitis; and so, not everybody develops aortic disease. Westenhöfer believes that there is the added stimulus of constant physical, mental, moral and toxic strain of our present-day life. It is evidently a disease of civilization.

PATHOLOGIC ANATOMY

The pathologic anatomy of aortitis not caused by *Spirochaeta pallida* is well described by Adami,[29] Benda,[30] Sbrocchi,[31] Mallory,[32] Escudero [33] and others. It may be acute or chronic, and may be either an endaortitis or a mesaortitis. The causative agent, bacterial or toxic, may be brought to the site of infection by the blood circulating in the lumen of the aorta, by that of the vasa vasorum, or very occasionally by direct continuity from a neighboring infection. That infection of the intima may be brought by the vasa vasorum was demonstrated by H. F. Swift at the recent meeting of the American Association of Physicians at Washington. Endaortitis is usually verrucose and occasionally ulcerative. If fibrin is deposited, fibrosis usually follows and often calcification. In mesaortitis, the muscle and elastic fibers are attacked and if the involvement is sufficiently extensive, the continuity of these fibers is interrupted.

As stated above, they are not susceptible of regeneration, and fibrosis follows. The inevitable result is dilatation of the aorta. There are attracted to the sites of these infections leukocytes, lymphocytes, endothelial leukocytes and, very rarely, mast cells. The response of these cells to the infection follows the usual rule that only those cells respond that are able to combat the particular type of irritation. These inflammations may occur in the course of any infectious disease, as typhoid, smallpox, scarlet fever, erysipelas, diphtheria, pneumonia, puerperal fever, influenza, rheumatism or tuberculosis, and in any condition in which there are foci of infection. While one hesitates to point an accusing finger again at infected teeth and tonsils, sufficient evidence has been accumulated to warrant the statement that they may be the source of infection.

In passing, it would seem fit to mention that both endaortitis and mesaortitis have been produced experimentally in animals, and that the lesions are closely allied to those seen in men. This refers in part to the work of Josue,[34] Gilbert and Lion,[35] Saltykow[36] and others.

CAUSATION

From the evidence at hand, it also seems reasonable to assume that certain other factors play a decided rôle in the production of this disease. Continuous overactivity of either the physical or nervous varieties, excesses of tobacco, alcohol and overeating seem to be secondary factors, although no scientific data can be furnished to fortify this statement. The present-day high pressure methods of both work and play probably assume the same rôle in the causation of this condition as they do in other degenerative diseases, especially those of the cardiovascular system.

SYMPTOMS

The aortic syndrome presents a picture in which there is a fairly constant group of subjective and objective symptoms. Since the object of this paper is propaganda for its recognition in early and mild cases, a word of warning is sounded that these symptoms are present in varying degrees in different cases. To detect them, therefore, it is necessary to use considerable vigilance.

Pain is one of the most constant symptoms. It is usually of the retrosternal variety in the region of the upper third, occasionally a little lower. It sometimes radiates into either arm, but this is not common. While it occasionally assumes the character of angina pectoris, it is more often a sensation of fulness, pressure or tightness. It frequently interferes with deep inspiration, and the patient sometimes complains that the heart feels as if it were turning over. It may occur without any known stimulus, but it usually follows physical exertion, such as climbing stairs or even a slight incline. Even walking on the level may produce it, and the person finds relief by stopping for a few minutes, after which the walk may be resumed. It is always more noticeable in cold weather, and it may be activated by simply coming into the cold from a warm room. This aortic discomfort, varying from a slight feeling of pressure to one of actual anginoid pain, is probably due to changes in intra-aortic pressure reacting on a diseased aortic wall. The source of the pain is in the nerve plexuses in the loose areolar tissue of the adventitia, according to the work of Thomas [37] and of Allbutt.[16] It has not been possible to demonstrate any relation between the amount of involvement of the aortic wall and the degree of pain, the anatomic damage being estimated by physical examination, roentgen-ray study and postmortem examination. The pain is to be differentiated from cardiac pain, which is usually precordial and near the apex, while that of aortitis is definitely retrosternal, usually in the upper third.

Dyspnea usually accompanies the sensation of pain, and it may occasionally be the predominating symptom. It may be present without pain. It is activated by the same conditions as in pain, especially physical exertion and cold. Along with the dyspnea there may be a more or less severe cough, and Boinet [38] believes that both of these symptoms may be due to an irritation of the first part of the aorta. In cases of extreme dilatation of the aorta, a chronic cough may appear as the result of

29. Adami, J. G., and Nicholls, A. G.: System of Pathology **2**: 176, 1911.
30. Benda, in Aschoff, Ludwig: Pathologische Anatomie **2**: 76, 1913.
31. Sbrocchi, A.: Aortite cronica, Folia méd. **8**: 257-297, 1922.
32. Mallory, F. B.: The Infectious Lesions of Blood Vessels, M. & S. Rep., Boston City Hospital, Series 16, 1913, pp. 148-163.
33. Escudero: Etiologia del'aortite acuta, Gazz. med. sicil., Catonia **17**: 10-12, 1914.
34. Josue, O.: Atherome aortique expérimental par injections d'adrénaline dans les veines, Compt. rend. Soc. de biol. **55**: 1374, 1903.
35. Gilbert, A., and Lion, G.: Arterites infectueuses expérimentales Compt. rend. Soc. de biol. **41**: 583, 1889.
36. Saltykow, A.: Experimentelle Forschung in der Lehre der Arteriosklerose, Zentralbl. f. d. ges. Physiol. u. Path. d. Stoffwechs. **3**: 654, 1908.
37. Thomas, cited by Brown (Footnote 10).
38. Boinet: Maladies des artères, cited by Brown (Footnote 10).

pressure on the recurrent laryngeal nerve. Babin [39] classifies aortic dyspnea under three heads: (1) dyspnea from exertion appearing on the slightest provocation; (2) paroxysmal dyspnea, especially during inspiration and usually occurring after the subject has been asleep for a short time, at least in the early stages of the disease, and (3) dyspnea, almost always painful, and accompanied by very disagreeable sensations.

Tachycardia is frequently an outstanding symptom and is one that the patient often observes himself. It is seldom accompanied by any irregularity. It may appear on slight exertion, but it may be entirely spontaneous. Even when fever is present, it is out of proportion to the rise of temperature. In some cases, it persists even after long periods of absolute rest in bed. The blood pressure is never high in uncomplicated cases. It is seldom above normal and is quite frequently subnormal, the latter condition probably being due to the dilated and rigid condition of the aorta and its interference with the normal blood stream.

Fever is present in many cases of acute and chronic aortitis. Popoff [40] has discussed this feature in detail. It seems probable that it is not recorded more frequently because it has not been taken regularly, many of the patients are not hospitalized, and those remaining at home do not require the services of a nurse. It is usually not very high, seldom reaching above 101. It is extremely irregular. It varies in its diurnal excursions, appears for a few days or weeks, and disappears for similar indefinite periods. It resembles somewhat the irregular fever of subacute endocarditis. In the absence of any other demonstrable cause for the hyperpyrexia, and with the other symptoms of aortitis present, the reasonable inference is that it is due to an active aortic inflammation. It is interesting to note that the usual antipyretics, such as the salicylates and coal tar products, fail to influence the fever.

Edema of the extremities of a very slight degree has occasionally been noted and has been reported, but it is not common. When it is present, cardiac disease as a cause must be eliminated.

RESULTS OF EXAMINATION

Physical examination offers a most interesting study in this group of cases. Changes in the aortic wall are the first to be considered, and are caused by a weakened wall, especially the media. Stretching of the aortic wall first produces an elongation and shortly afterward an increase in diameter. With the lengthening, the arch is raised, thus producing one of the most typical signs, suprasternal pulsation. Concurrently, both subclavian arteries are elevated above the clavicles, the right appearing first, on account of its anatomic position. There are then produced visible supraclavicular pulsations, also typical findings in this condition.

Widening of the aorta may be demonstrated by percussion to the right of the sternum in the second and third interspaces, although this is very difficult in very early cases. In fact, the actual widening in the incipient cases is probably so slight that it is impossible.

The signs to be elicited by auscultation over the aortic area remain a matter of some discussion. There is usually a distinct soft blowing or roughened murmur best heard in the second interspace close to the border of the sternum. If it is at all distinct, it can be followed along the course of the aorta, even down the left side of the sternum. It is sometimes transmitted to the great vessels of the neck. In the incipient and very mild cases, it sometimes requires a little exercise to make it audible, and is best heard in the upright position. Kukovieroff [41] has called attention to a most interesting phenomenon in this connection. Following the suggestion of Sirotinin, he states that this systolic murmur can be heard in the incipient cases with the patient in the upright position with the hands on the head, and that it is not audible when the hands are at the side. It is heard in the second right interspace or over the sternum in this region, and it is to be differentiated from the murmurs of pericarditis, venous hums and cardiopulmonary murmurs that are also heard in this region. I have confirmed these findings in observations in a few cases, and also find a marked accentuation of a systolic murmur, which is already present. Another important sign is an accentuated, second aortic sound. The latter is loud, ringing and bell-like. A diastolic murmur, due to involvement of the aortic valves, or a stretching of the aortic ring, is certainly not a necessary accompaniment. In fact, it is seldom found in the nonsyphilitic variety of aortitis.

Sensitiveness to pressure over the sternum or of the aorta itself in the suprasternal notch is a symptom occasionally to be found. Pressure symptoms are not frequent and are usually seen late in the disease. They are most unusual in the early and mild cases. They include pressure on the recurrent laryngeal nerve, the bronchi, the trachea and the sympathetic nerves, the latter with pupillary changes. While not frequent, they are very important when observed. Gerber [42] states that paresthesia of the neck is frequently an early symptom due to irritation of the sensory fibers of the recurrent laryngeal nerve. The galvanopalpation methods proposed by Zak [43] and Kahane [44] apparently do not possess definite diagnostic value.

Roentgen-ray studies have proved to be of tremendous diagnostic and corroborative value in the conduct of this disease. Reports have been made by Leconte,[45] Bailey,[46] Frazer and MacRae,[47] and many others. Spiro [11] has proposed the use of the angle finder in these studies. Varying with the severity of the disease process, roentgenographic examination will show the following important variations from the normal: (1) an increase in the size of the aorta; (2) an accentuation of the aortic opacity, and (3) a more or less marked increase in the size of the heart. The size of the heart is of some prognostic moment since it shows the amount of cardiac resistance.

REVIEW OF CASES

The cases presented here have been selected with age as the deciding factor, all of the patients being under 40. This has been done to refute the general conception that nonsyphilitic aortitis and dilatation are essentially a sclerosis and an incident of advancing age. There are twenty-nine cases, and at the following ages: one, 18; two, from 20 to 25; six, from 25 to 30; twelve, from 30 to 35, and eight, from 35 to 40.

39. Babin, R.: A Clinical Study on Dyspnea in the Aortic Syndrome, Internat. Clin. **2**: 222-240, 1919.
40. Popoff, P. M.: Aortitis und Fieber, Ztschr. f. klin. Med. **75**: 506-517, 1912.
41. Kukovieroff, N. G.: Diagnosis of Incipient Sclerosis of the Aorta, Russk. Vrach. **9**: 1944-1952, 1910.
42. Gerber.: Paraesthesien des Halses als Frühsymptom bei Erkrankungen der Aorta, Deutsch. med. Wchnschr. **45**: 167, 1919.
43. Zak.: Vasomotorische Zonen bei Aortenkranken, München. med. Wchnschr. **66**: 703, 1919.
44. Kahane, M.: Ueber Gefässreaktion bei Aortenaffektionen, Wien. klin. Wchnschr. **33**: 646, 1920.
45. Leconte, M.: Interpretation of Radioscopic Findings in Certain Forms of Aortitis, Presse méd. **31**: 463-467 (May) 1923.
46. Bailey, S. E.: Disease of the Aorta as Shown by Fluoroscopic Study, California State J. Med. **16**: 490 (Nov.) 1918.
47. Frazer, T., and MacRae, J. D.: X-Ray Diagnosis of Aortitis, South. M. J. **15**: 261-268, 1922.

There were nineteen females and ten males, which does not correspond with the usual statistics, but this is unimportant in a small series. Syphilis was excluded by careful examination and repeated Wassermann reactions, and in some cases, a provocative Wassermann reaction. Every possible effort was made in the exclusion of syphilis. These patients either presented themselves with symptoms referred to the thorax, or were discovered in the course of a general examination. The latter group described symptoms on careful questioning, and many of these symptoms were found to have been present for some time, but had been disregarded by the patient. Nine of these cases were of the mild or incipient type, seventeen were moderately severe, and three were of the severe type.

None of these cases appeared to be secondary to an infectious disease, so that some other etiologic factor had to be sought. Apology is again offered in mentioning foci of infection in the teeth and tonsils, but, in the absence of other sources of infection, suspicion naturally pointed in this direction. For this reason, all possible sources of infection from the teeth and tonsils received thorough and radical treatment. The gastrointestinal tract also received attention on the theory that it might be the source of toxemia.

In four of the nine mild cases there was spontaneous pain or dyspnea, and in the other five, discomfort after physical activity. Tachycardia was not present, and the blood pressure was slightly subnormal in all. Fever of the usual irregular type was present in only one case. A systolic aortic murmur in the second right interspace was found in eight, exercise in the other case being required to make it audible. In these mild cases, the murmur was transmitted very little. The second aortic sound was accentuated in all, and was usually ringing. Slight suprasternal pulsation was present in seven, and sternal and aortic tenderness in two. Three of these persons showed a marked secondary type of anemia. In none of these cases could a widening of the aorta be demonstrated by percussion. Roentgen-ray examination showed a slight lengthening in two.

In the moderately severe group, all seventeen patients complained of some degree of retrosternal discomfort, always increased by activity or excitement, and tenderness was present in eight. Dyspnea on slight provocation was present in all. Tachycardia, varying from 90 to 130, was observed in eleven. The blood pressure was slightly increased in one case (145 systolic, 90 diastolic); was normal in six, and was subnormal in ten. Fever lasting from one month to six months was found in six cases and was of the irregular type desscribed above. A distinct systolic aortic murmur was present in all the cases, increased by exercise and by placing the hands on the head. It was transmitted according to its intensity. The second aortic sound was always definitely accentuated. Suprasternal pulsation accompanied by pulsations above the clavicles were also always present. Roentgen-ray examinations made in ten showed positive evidence of aortic disease in seven. Sternal and aortic tenderness was found in six. The three severe cases presented all the classical symptoms to a marked degree. They showed marked retrosternal pain and fulness, two presenting rather typical aginoid paroxysms. There was also dyspnea and tachycardia. The suprasternal and supraclavicular pulsations were very striking, and there was also sternal and aortic tenderness. One patient was afebrile; the other two had fever ranging between 99 and 101 F., lasting from five months, in one case, to nine months, in the other. As usual, there were frequent periods during this time when there was no fever. The blood pressure was slightly elevated in one (155 systolic, 95 diastolic); slightly subnormal in one (100 systolic, 64 diastolic), and in the third showed striking variations from subnormal to elevated blood pressure. Roentgen-ray studies showed aortic dilatation in all three cases. Complications were practically absent. The case showing variations in blood pressure showed evidence of myocardial weakness during the periods of subnormal blood pressure. It is very interesting to note that none of these severe cases showed any suggestion of impairment of kidney function.

The laboratory examination of most value was the Wassermann reaction in the exclusion of syphilis, and of course it is realized that a negative reaction is not an absolute assurance that syphilis is not present. Estimations of the hemoglobin, red cells and white cells was of no great moment except in several cases of complicating anemia. Blood cultures were made repeatedly in the febrile cases, but in no case was a positive result obtained.

Fortunately for the patients, there were no deaths in this series, and therefore no postmortem evidence can be furnished. The lack of this information is to be regretted from the scientific standpoint.

PROGNOSIS

The prognosis in the mild cases is very good, all nine patients making a complete recovery. In the moderately severe cases it is relatively good, and twelve of the seventeen patients made complete recoveries, the remaining five showing an estimated 90 per cent. improvement. The severe cases are a rather poor prospect for complete recovery, although remarkable improvement can be obtained. Two of the three severe cases showed an estimated 75 per cent. improvement, and one, only 50 per cent. At the outset, it is important to warn the patient that it is a matter of months and not weeks that will be required in the treatment of his case.

TREATMENT

Treatment first should be directed to the removal of all foci of infection. Rest in bed is usually necessary, and the time may vary from several weeks to six months or more. The severity of the disease will regulate the length of time to be spent in bed. In cases not requiring rest in bed, and in those after such a rest, careful regulation of daily habits and exercise is necessary. Rest in the recumbent position for one or two hours in the middle of every day is especially recommended, for the mild and convalescent cases, over long periods of time. Iodids are usually given in large doses for a long time, on purely empiric grounds. Symptoms are to be treated as they arise. The careful regulation of the diet is important. Overeating in general is to be avoided, and especially animal protein and the meat extractives. Tea, coffee, alcohol and tobacco are to be used in great moderation. In fact, moderation in all things is a very good rule.

SUMMARY

1. Twenty-nine cases of nonsyphilitic aortitis showed a sufficient number of the classical symptoms to warrant a definite diagnosis. The patients were all under 40 years of age.

2. The aortic syndrome, with its well established group of symptoms, should occupy a more important place, not only in our textbooks, but in the minds of medical men.

3. It is apparently one of the few diseases of the cardiovascular system that offers a chance for complete restoration to the normal when a diagnosis is made in its incipiency.

4. It is a not uncommon disease, commonly overlooked.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. PARDEE AND NEUMAN

DR. WILLIAM D. REID, Boston: In regard to the question of nonsyphilitic aortitis, I agree with Dr. Neuman. We should all think about this condition more. One point is the systolic murmur at the base; what produces this? It is said to be due to the roughness of the valve or of the aortic wall. In his work, Chauveau denied this. I did some experimental work with Professor Chaffee of Harvard, and we were able to confirm this statement. In the postmortem findings of 100 cases I found that there were many other reasons for the murmur than roughness of the aortic wall. If we consider why we have murmurs in stenosis, it is found to be because of a sudden change in the caliber of the vessel; we get a jet provided there is sufficient pressure and velocity of the stream. Dr. Neuman says that the aorta both elongates and widens. This would produce the jet mechanism. I think that many persons classified as normal have systolic murmurs in the aortic region. We should remember the diagnosis that Dr. Neuman has emphasized, and also that some persons may have such a systolic murmur for years without detriment to health. These people can be kept under observation. At postmortem, other physical changes than roughness alone will be found. These patients need not go to bed or be considered as ill.

DR. EUGENE S. KILGORE, San Francisco: I agree with Dr. Pardee, but cannot go quite all the way with Dr. Neuman in his suggestion of the prevalence of nonsyphilitic aortitis. Possibly geography is partly responsible for the difference in our point of view, since rheumatic infection is relatively uncommon in California, while we have our share of syphilis. The controversy over relative importance of syphilitic infection in the etiology of aortitis has gone on ever since the English physician Welch, fifty years ago, called general attention to the frequent syphilitic etiology. In recent years continental writers have continued to emphasize the frequency of nonsyphilitic aortitis, while American students of the subject have generally come to regard syphilis as the commonest or nearly sole cause of the disease. Syphilis is always difficult to "rule out." A large percentage of its victims are ignorant of the source of infection and give a negative history; and the physical examination and blood tests are often negative. McCrae, while emphasizing the occurrence of nonsyphilitic aortitis, describes one of his own cases of aortitis believed to be nonsyphilitic for several years, until the evidence of syphilis was finally obtained from the spinal fluid. Many patients with syphilitic aortitis undoubtedly lose valuable time before obtaining antisyphilitic treatment, through failure to obtain an early diagnosis. I believe in the existence of nonsyphilitic aortitis, but as a comparative rarity. Such diagnosis can doubtless be made with reasonable certainty if, in the presence of such an infection as rheumatic fever, definite changes in signs relating to the aorta, tenderness in the episternal notch, etc., are observed to develop. But the ordinary case presenting symptoms and signs described by Dr. Neuman, should, in my opinion, be kept under strong suspicion of being syphilitic regardless of all other findings.

DR. LOUIS FAUGERES BISHOP, New York: We have listened with a great deal of pleasure to these papers, but there are certain points that can be considered. In regard to Dr. Neuman's paper, which was a beautiful clinical study of cases actually observed: There have been two schools of cardiology under two great leaders, Sir Clifford Allbutt and Sir James MacKenzie. Dr. Allbutt had the aorta in mind in interpreting such symptoms; Dr. MacKenzie had the heart muscle in mind primarily. I have always been on the side of MacKenzie. I do not take much stock in the theory of the importance of slight signs in the aorta. A tortuous aorta does not do much harm. The blood pressure may increase and cause it to get larger, or the blood pressure may fall and cause it to get smaller. I believe the aorta is usually as good as the heart back of it, and that most of the symptoms attributed to the aorta are cardiac muscle symptoms. I believe the patient should be treated for the heart rather than the aorta. It has been a great pleasure to me in the course of my office consultations to divest patients of worry, who come to me thinking that they are suffering from aortitis. They may have slight changes, but they are not important. I have watched such patients as long as fifteen years, and they finally died of something else. I have never known patients to come to harm from slight changes in the aorta. We have a few cases of aneurysm and a few cases of syphilitic aortitis, but the vast majority of patients with slight changes in the aorta need not cause us any worry. I can think of nothing more productive of misery than to take such a patient with slight changes in the aorta and order complete rest with large doses of iodids. I give nitroglycerin symptomatically. I try to build up the heart muscle and I order exercise outdoors. The aorta looks the same, but the patients are soon well symptomatologically. One can either ignore the aorta and have the patients well, or one can emphasize it and have them invalids. I believe we should build up the heart and keep the patient well. Systolic murmurs due to dilatation of the aorta are due to change in the caliber of the blood vessels. I feel, however, that Dr. Neuman has done good service in pointing out a clinical group of patients of this type. It is a nice study, even if it is one that need not be considered as severely as he does. Dr. Pardee's paper is a valuable contribution to the question of digitalis. There are one or two points of importance. One valuable clinical point is that the dosage of digitalis should be regulated by the size of the heart. When I get a child or young person with a very large heart, I have to give large doses to get the effect. When the heart is of normal size, the dosage is not so great. The recognition of the importance of adequate doses of digitalis is one of the chief accomplishments of modern cardiology. There is one practical point which is not often thought of; that is, the giving of digitalis by rectum. Sometimes one is called on to treat a serious case with vomiting, and by giving large doses by rectum, well diluted, we can accomplish the desired result. It is a point worth remembering. I think these are the chief points to cover: the relative unimportance of slight changes in the aorta, because the aorta is generally as good as the heart back of it, and the importance of adequate doses of digitalis.

DR. LESTER NEUMAN, Washington, D. C.: An important conclusion by Westenhofer after long study is that aortitis is much like tuberculosis of the apex of the lungs and also like appendicitis, in that it can be explained on a phylogenetic basis. He bases his conclusions on the fact that there is a marked difference in the development of the thoracic cage and spinal column, producing a marked disproportion between the spinal column, the spinal cord and also the aorta. Another predisposing factor is that no organ in the body must withstand such constant lashing as the aorta. It is subjected to the shock of every systole twenty-four hours every day, and no other organ is subjected to such punishment. Few aortas, therefore, pass middle life without some damage. I wish to emphasize again that muscle fibers and elastic fibers fail to regenerate after being destroyed, and for this reason early diagnosis is of great importance. In emphasizing the observation of Kukovieroff that the systolic murmur of aortitis could be heard best with the hands on the head, I did not wish to give the impression that the diagnosis was based on this systolic murmur alone. It is based, however, on the entire symptom complex. I agree with Dr. Kilgore that the majority of cases are due to syphilis. On the other hand, there is no reason for neglecting the smaller group not due to syphilis. I hesitate to disagree with Dr. Bishop, but I must take the side of Allbutt. I do not believe that we are warranted in disregarding any

pathologic condition, whether it be in the aorta or anywhere else in the body, and I therefore do not see how Dr. Bishop can disregard a diseased aorta. While the number of cases is not very large, this group of patients require advice and guidance. I also want to emphasize that every patient is not put to bed and thereby made an invalid. Only the more severe cases require such strenuous treatment. Many of these patients have fever without any other symptoms except those referred to the aorta, and the logical assumption is that the inflammatory condition exists in this organ. Again, referring to the question of rest, whether in bed or not, many of these patients are very uncomfortable after exercising. This is especially true among golf players. I have seen a number of patients who complain of pain and distress in the chest after playing a few holes. It was not possible to demonstrate any cardiac disease, but there were definite signs of the aortitis, and a limitation of their activities produced a marked improvement.

DR. HAROLD E. B. PARDEE, New York: The initial dose of all these drugs must be larger than one ampule if we wish to obtain definite digitalis effects. I have used with good effect one-half minim to the pound of body weight. For a person of 150 pounds, 5 c.c., by vein, is the initial dose. I think it might be larger without danger, and am at present attempting to determine how much larger. Furthermore, it appears that the action by vein is not much quicker than by mouth, when comparing small doses by vein with large doses by mouth. This gives a still stronger reason for not depending on small intravenous doses for emergency effects in a previously untreated patient.

VISUAL EFFICIENCY OF VARIOUS DEGREES OF SUBNORMAL VISUAL ACUITY

ITS EFFECT ON EARNING ABILITY *

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Among the many complex problems encountered in a study of visual economics is the one relating to the range of useful industrial vision. What is the threshold in the Snellen scale that indicates the beginning of industrial incapacity, and also what is the threshold of complete industrial incapacity?

One may find many expressions of opinion in regard to these two points, but there are not available any recorded and tabulated statistics relating thereto. For this reason I offer a tabulated record of 100 selected cases of defective vision, with a range *in the better eye* from 20/40 Sn. to 5/200 Sn., showing particularly the effect of these various degrees of lowered visual acuity on the individual's ability to work and on his earning capacity.

Magnus and Würdemann [1] state that there is no loss to earning capacity when visual acuity is not less than 0.75 Sn. in those vocations requiring the highest degree of visual acuity; and that there is no loss when visual acuity is 0.5 Sn. or better for those occupations which do not require a high degree of visual acuity. Holt [2] considers that there is no loss to earning ability when visual acuity is 0.8 or better. The Veterans' Bureau of War Risk Insurance does not compensate for loss of visual acuity when the defect is 20/30 Sn. or less. Thus, from these authoritative sources we find that a visual acuity of not less than 20/30 or 20/40 is regarded as causing no loss to earning capacity.

There is a wider range of opinion in regard to the point of total industrial incapacity. Zehender [3] states that 1/100 Sn. renders the individual totally incapacitated for industrial work, while, by a ruling of the New York State Industrial Commission, a 20/100 Sn. is the point of visual acuity from which it computes a total loss of use of an eye. Many points between these extremes have been suggested by various authors and by various committees.

In order to obtain first hand information with regard to the effect which various degrees of loss of visual acuity might have on the earning ability of the individual, I have made a careful investigation of these tabulated cases. I obtained information in most cases by questioning the person as to the nature of his occupation, any difficulty experienced, forced change of occupation, and finally any loss in wages or loss in time as the result of the visual incapacity. I myself examined and interviewed all the patients except 32 to 54, inclusive. The latter were investigated and examined by Dr. Ira Hinsdale, the data being obtained at the Eastman Kodak plant. These people were observed at their work. They were not only personally interviewed in regard to any conscious visual difficulty, but the quality of the work and the efficiency of each employee also was investigated by the foremen or the superintendents of the various departments under whom these persons were working, and their observations were recorded.

In the selection of these cases I have attempted to include only those who were dependent on vision to perform their assigned tasks, and I attempted also to select working people from as many different kinds or classes of employment as was possible. No case of high myopia, with one exception, is included in the list, as I found that many persons with comparatively high myopia, even when such have a considerable reduction to visual acuity for distance (some cases with 20/100 Sn. or less) had very good visual acuity for near, being able to read six point or pearl print at from 10 to 12 inches. All these cases, which would thus have a more favorable effect on the statistics, were rejected.

It is so generally conceded that a visual acuity better than 20/40 Sn. and less than 20/20 Sn. has little or no effect on visual efficiency that only those cases with acuity of not better than 20/40 Sn. are included in the tabulation. However, I have made a study of several hundred industrial employees with visual acuity of 20/25 or 20/33 Sn. in the better eye, and in no instance, no matter how fine or delicate the work might be, did I find that these trivial defects ultimately influenced either the efficiency of the worker or his earning capacity. I give the history of a single case of this class to illustrate this point:

F. T., a man, aged 36, employed as a tool and die maker, has a visual acuity of 20/33 in the right eye and 20/100 in the left eye; he has never used any glasses. For the fine tool work he uses a monocular loop, but for ordinary bench work and other ordinary duties pertaining to the trade of a tool worker, he has never used any glass. He received a serious injury to his left eye two years ago from a penetrating piece of steel. At present there are vitreous and retinal changes, and the eye diverges from 10 to 12 degrees, so that he is dependent entirely on the vision of the right eye. This man receives maximum wages as a tool maker and states that he has not lost a day's work because of any eye trouble; never has headache; has no other symptoms of eye strain, and states further that he has been able to do all his work in a first

* Read before the Section on Ophthalmology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Magnus and Würdemann: Visual Economics, p. 117. Würdemann: Am. J. Ophth., April, 1922, p. 321.

2. Holt: Tr. Am. Acad. Ophth. & Oto-Laryngol., 1914.

3. Zehender: Klin. Monatsbl. f. Augenh., 1889, p. 268.

class and efficient manner. The right eye shows a moderate degree of far sighted astigmatism. His visual acuity is not better at the near point.

Visual defects even of this minor class, when recently acquired, do cause some degree of inefficiency for a time, but after two or three months have elapsed this is overcome entirely. Despite this fact, I wish to point out that with repeated trivial injuries causing slight defect in vision, there follows an accumulated effect. The total effect of two or more injuries which alone would cause only a slight disturbance to acuity will be sufficient often to interfere with the worker's efficiency. For example, a single injury, that reduces visual acuity to 20/30 Sn. would not interfere with one's working ability. But assuming a second injury of the same degree that would reduce the acuity to 20/40, and a third

One Hundred Cases of Visual Acuity Impairment, Ranging from 20/40 to 3/200 Snellen in the Better Eye

Case	Present Age, Sex*	Occupation	Vision with Correction O. D.	Vision with Correction O. S.	Glasses	Refraction	No. of Years Defective	Cause for Defect	Loss to Earning Ability	Lost Time, Pay	Comment
1	32, ♀	Tailor	L	20/60	Yes	H	20	Corneal opacity	None	Married, did not work 1 year	Always received the maximum wages
2	42, ♂	Mail carrier	20/40	20/100	Yes	H	4	Retinitis, left eye	None	No lost time	Right eye: congenital amblyopia
3	18, ♀	Saleswoman	20/65	20/100	Yes	M-A	10+	Conical cornea	None	.....	Finished two years high school, six months saleswoman
4	19, ♀	Box factory	20/100	20/40	Yes	H, H-A	19	Congenital amblyopia	None	.....	Completed seventh grade; strabismus
5	31, ♂	Clerk, wholesale	20/65	F	Yes	M	31	Congenital cataract	None	First and only job, 2 years	Completed high school; reads 7 point at 8 inches
6	45, ♀	Shoe factory	20/40	20/100	Yes	H	40	Amblyopia	None	Fifteen years shoe mkg.	Advanced to floor lady
7	28, ♀	Kodak	20/30	20/30	No	H-A	20	Lent. astigmatism	None	No lost time	Glasses improve, but does not wear them
8	44, ♀	Tailor	20/40	20/40	Yes	H, H-A	40	Amblyopia	None	Six years as tailor	Since marriage, has done all her own sewing
9	74, ♂	Paper mill	20/40—	B	Yes	H, H-A	2	Glaucoma	None	Full pay	Reads 7 point; no trouble with work
10	59, ♂	Factory	5/200	20/50	Yes	H, H-A	50	Amblyopia	None	Maximum pay	Twelve years foreman in power house; at times a painter
11	48, ♀	Kodak	20/50	20/50	Yes	M-A	20+	Conical cornea	None	Full pay	Works on leather
12	69, ♀	Proofreader	20/40	20/65	Yes	H-A	5+	Choroiditis	None	Full pay	Has worked continuously, last five years
13	75, ♂	Judge	20/65	20/50	No	E	3+	Vitreous opacities	Retired	Age limit	Now acts as referee; reads 3 to 4 hours at a time; says he thinks he is 20 per cent. defective
14	47, ♂	Electrician	20/100	2/200	Yes	Cat. glass	7	Cataract elec. oph.	Nearly total	Incapacitated as electrician	Could not work as a lineman; has done janitor work three years
15	62, ♂	Sawmill	B	20/65	Yes	M	6+	Glaucoma	Some	Full pay when at work	Operates a mill saw; field contracted to 35 degrees concentrically
16	60, ♂	Laborer	B	20/65	No	.....	1	Corneal scars	None	.....	Worked all year in stone quarry since recovery from accident
17	69, ♂	Laborer	B	20/40	No	M	2	Glaucoma	None	.....	Worked in salt mine 1 year since loss of eye; 1 year as janitor
18	31, ♂	Molder	20/50	20/40	Yes	H, H-A	15+	Amblyopia	None	Maximum pay	No difficulty with his work as a molder
19	30, ♂	Factory	20/65	20/100	No	E	30	Amblyopia	None	Equal pay with others	Making insulators for several years; no difficulty
20	42, ♂	Machinist	20/50	20/80	Yes	M	7	Corneal scar, vitreous opac.	None	Full pay	Has received compensation for partial loss
21	51, ♂	Machinist	20/150	20/65	Yes	M, M-A	6+	Corneal opacity	None	Worked continuously	A blacksmith; high myopia
22	41, ♂	Molder	20/40	B	Yes	H-A	5	Corneal scars	None	Worked most of time	Vision at first was 20/100
23	30, ♂	Machinist	20/50	5/200	Yes	H, H-A	12	Amblyopia	None	Works steadily	Had an attack of iritis following accident to right eye
24	10, ♀	School	20/250	20/250	No	+0.25 S +0.50 Cy	4	Retinitis	.....	School	Completed the three lower grades in school
25	58, ♂	Policeman	L	10/200	No	.....	8	Cataract	None	.....	Has worked past 2 years with vision less than 20/200
26	70, ♂	Elevator	10/200	B	No	—1.50 Cy	7	Glaucoma	None	Worked continuously until 1923	Vision: 1917, 20/50; 1918-1920, 20/200; 1921-1923, 10/200, 5/200
27	54, ♂	Policeman	12/200	L	No	.....	2	Cataract	None	No lost time	For two years vision in better eye was 20/200 and less
28	25, ♀	Stenographer	5/200	20/50	Yes	M, M-A	10+	Conical cornea	None	Lost time occasionally	Recurrent central corneal ulcerations; highest pay at present
29	57, ♂	Stationary engineer	20/200	20/200	No	H, H-A	57	H & H-A	None	None	Twelve years at present job; has never worn glasses at work
30	73, ♂	Driver delivery	5/200	5/200	No	H	3+	Nuclear cataract	None	None	Drives a horse about city, delivering tobacco
31	38, ♂	Painter	10/200	10/200	No	E	6+	Retinitis centralis	One half	Considerable	Has not been able to secure a position, but has been working for himself at his trade
32	25, ♂	Kodak	20/65	20/200	No	M, H-A	5+	Amblyopia	None	None	Works as inspector of plates, dark room
33	65, ♂	Shoemaker	20/200	20/200	No	.....	2+	Nuclear cataract	Yes	Not able to work	Near vision is much worse than distant; 20 point at 10 inches
34	39, ♂	Draftsman	20/40	20/65	Yes	H, H-A	39	Amblyopia	None	None	Has worked 10 years as a draftsman
35	15, ♂	School	10/200	20/40	Yes	H-A	15	Cataract	.....	.....	Has reached second year junior high school; plays in orchestra
36	27, ♂	Lacquer sprayer	20/100	20/50	Yes	H-A	..	.....	None	None	Work good
37	30, ♂	Lacquer sprayer	20/40	20/200	Yes	Mixed astig.	..	Choroiditis	None	None	Work good
38	63, ♂	Assembling, camera repair	20/70	20/70	Yes	M	..	Large central opacity	None	None	Work good, close but not fine
39	58, ♂	Dipping	20/40	20/40	Yes	H	..	Presbyopia	None	None	Work good
40	23, ♀	Factory worker	20/40	20/40	Yes	H-A	..	.....	None	None	Work good
41	51, ♂	Tool maker	20/40	20/40	Yes	.....	..	Presbyopia	None	None	Work is close; quality is excellent
42	21, ♀	Clerical work	20/50	20/50	Yes	H-A	..	.....	None	None	Work good
43	43, ♂	Clerical work	20/40	20/40	Yes	H-A	..	.....	None	None	Quality of work is excellent
44	17, ♀	Mail delivery	20/70	20/70	Yes	M-A	..	.....	None	None	Work satisfactory
45	21, ♂	Shipping department	20/70	20/70	Yes	M-A	..	Interstitial keratitis	None	None	Lays out orders and clerical work, good
46	56, ♂	Roll coating department	20/70	20/40	Yes	Mixed astig.	..	.....	None	None	Dope coating, not fine; work excellent
47	63, ♂	Finishing department	20/50	20/40	Yes	H	..	.....	None	None	Mixes chemicals; work excellent

* In this column, ♂ indicates male; ♀, female.

One Hundred Cases of Visual Acuity Impairment, Ranging from 20/40 to 3/200 Snellen in the Better Eye—Continued

Case	Present Age, Sex*	Occupation	Vision with Correction O. D.	Vision with Correction O. S.	Glasses	Refraction	No. of Years Defective	Cause for Defect	Loss to Earning Ability	Lost Time, Pay	Comment
48	19, ♀	Billing department	20/40	20/40	Yes	H-A	..	.....	None	None	Typing, fine work; excellent work
49	48, ♂	Kodak	Bl.	10/200	....	.....	..	.....	Total	Total	Retired because of low vision
50	36, ♂	Factory worker	20/70	20/100	Yes	A	..	.....	None	None	Film beater; work not fine; excellent
51	44, ♂	Foreman	20/70	20/100	Yes	E	..	Bilateral amblyopia	None	None	Work good
52	41, ♂	Head painter	20/70	20/40	Yes	M-A	..	.....	None	None	Work good
53	56, ♂	Paint cleaner	20/50	20/40	Yes	H-A	..	.....	None	None	Work good
54	16, ♂	Trucking	20/50	20/40	Yes	H-A	..	.....	None	None	Work good
55	45, ♀	Bookkeeping; stenography	20/40	20/40	No	M	45	Congenital cataract	None	None	Stenographer 20 years; no difficulty in holding position
56	40, ♂	Shoemaker	20/100	20/50	Yes	M, H-A	8+	Neuroretinitis	None	None	Operates a machine
57	20, ♂	Student	20/50	20/40	Yes	H, H-A	20	Amblyopia	.....	.....	No trouble with study; working at mechanics
58	50, ♂	Merchant	20/40	20/50	Yes	H, H-A	20	Keratitis	None	None	Trophy winner at tennis and "horseshoes"
59	19, ♂	Farmer	20/40	20/65	Yes	Cat. Gl.	19	Congenital cataract	None	None	General farm work without difficulty
60	70, ♂	Teamster	20/60	20/50	Yes	Cat. Gl.	70	Congenital cataract	None	None	Has driven a team for 30 years
61	48, ♂	Farmer; laborer	20/40	20/100	Yes	Cat. Gl.	48	Congenital cataract	None	None	Never worked at skilled trade
62	40, ♀	House	20/40—	20/40	Yes	M, M-A	20+	Amblyopia	None	None	No trouble with usual duties pertaining to house work
63	32, ♂	Mechanic	20/50	20/40	Yes	M-A	20	Corneal scars	None	None	Has always done close work since leaving school
64	30, ♀	Housewife	10/200	20/40	No	Irreg. astig.	25	Corneal scars	None	None	Usual duties of housekeeper
65	58, ♀	Housewife	20/100	20/50	Yes	H-A	50	Amblyopia	None	None	Never any trouble with reading or sewing
66	58, ♂	Grocer	20/40	20/50	Yes	M, M-A	20+	Retinitis	None	None	Proprietor of grocery store 20 years; has kept own books, etc.
67	24, ♂	Farmer	20/200	20/200	No	.....	24	Congenital cataract	None	None	Has worked on the farm for 20 years; no difficulty with any kind of work; lower grades at school
68	30, ♀	Housewife	3/200	Field	No	.....	10	Optic atrophy	.....	.....	Does all her own housework
69	23, ♂	Office	20/100	20/100	Yes	H, H-A	23	Nystagmus	None	None	Ten years' clerical work in office, bookkeeping, typing, etc.; cannot run an auto.; three jobs in 10 years
70	60, ♂	Machinist	20/100	20/100	Yes	—0.75 S.	4	Tobacco amblyopia	None	None	Has worked continually at various operations in machine shop
71	13, ♀	School	20/65	20/50	Yes	H, H-A	8	Corneal scars	.....	.....	Fifth grade; no trouble with school work, but reported slow and dull
72	54, ♀	Housewife	20/40	20/65	Yes	H, H-A	15+	Iritis	.....	.....	Fine sewing and very fond of crocheting
73	13, ♀	School	20/50	20/65	Yes	H, H-A	..	Amblyopia	.....	.....	Has never failed to pass any grade in school
74	20, ♂	School	20/50	20/50	Yes	M	15+	Retinitis pigmentosa	.....	.....	Fields cut to 25 ecc.; has reached second year normal school
75	16, ♀	Laundry machine	20/100	20/65	No	.....	..	Interstitial keratitis	.....	.....	Works in steam laundry; no difficulty with machines
76	59, ♂	Mechanic; elevator	20/200	20/200	No	H	5	Cat. Ret. Cent.	Yes	Considerable loss in pay	Mechanic for years; has operated elevator last 5 years
77	34, ♀	Housewife	20/100	5/200	Yes	H	6	Retinitis gravidarum	None	.....	Does all housework and sewing; trouble threading needle
78	72, ♂	Lawyer	20/40	20/50	Yes	H	8	Vit. Opac., right eye; amblyopia, left eye	None	.....	Prodigious reader; large, active legal practice
79	70, ♀	Physician	20/40	20/40	Yes	H, H-A	60+	Amblyopia	None	.....	General medical practice; some minor surgery
80	29, ♂	Road builder	20/50	20/50	No	.....	3+	Optic atrophy	None	None	No trouble with work; does grading satisfactorily
81	36, ♀	Stenographer; off. work	20/40	Fin.	Yes	Low M-A	10+	Choroiditis	None	Maximum pay	All kinds office work 15 years; trouble reading some script
82	20, ♀	Student	20/100	20/100	Yes	M-A	16+	Nystagmus	.....	.....	Second year in college; no difficulty with work
83	19, ♂	Tool maker	20/65	20/50	Yes	M-A	19	Congenital cataract	None	Maximum wages	"Snow blind"; regarded as first class toolmaker
84	64, ♂	Baker	20/200	20/200	No	E	2+	Retinitis, diabetic	None	Maximum wages	Has not lost a day at his trade; trouble doing fancy pastry, white on white
85	35, ♂	Laborer	20/100	20/100	No	E	35	Amblyopia	None	Low wage scale always	Factory laborer; never tried to operate machine; not skilled
86	27, ♂	Undertaker	20/100	20/100	Yes	M	15+	Amblyopia	None	Successful business	No trouble with any detail of his work
87	67, ♂	Grocer	20/50	20/65	Yes	H, H-A	50+	Amblyopia	None	Successful business	Keeps his books and does general grocery business
88	62, ♂	Librarian	20/320	20/320	Yes	H	8+	Tobacco amblyopia	None	35 years librarian	Continued to work and read books until v. = 20/320 both eyes; but used magnifying glass
89	80, ♂	Watchmaker	10/200	20/40	Yes	H, H-A	10+	Cataract	Some	Some loss of time	Continued to repair watches until v. fell below 20/60
90	50, ♂	Commercial traveler	20/200	20/40	Yes	H	50	Congenital amblyopia	None	Successful salesman	Never any trouble in figuring or making reports
91	24, ♂	Canning factory	20/100	20/200	Yes	H	20	Specific congenital retinitis	.....	Never had good job	Finished 1 year at high school; fills boxes in canning factory; janitor in winter
92	41, ♂	Metal finisher	20/65	20/200	No	E	3	Diabetic retinitis	Some	Lost time, no loss in pay	Says he can do work all right; vision blurred
93	30, ♀	Clerk	20/200	20/200	Yes	M-As	20	Con. cornea	None	Not highest pay	Been clerk 8 years; reads book print; eyes tire
94	25, ♀	Tailoring	20/40	20/40	Yes	H, H-A	20+	High degree H	None	Highest pay	Considered first class tailoress
95	70, ♀	Librarian	20/50	20/65	Yes	H, H-A	15	Glaucoma	None	Full pay	20° conc. contract. in better eye; considerable reading and all library work
96	31, ♂	Tailor	20/40	20/40	Yes	H	31	Amblyopia	None	Full pay	No trouble at all with work
97	47, ♂	Painter	20/65	20/40—	Yes	H, H-A	47	Amblyopia	None	No lost time	Work satisfactory; not conscious of any defect or handicap
98	37, ♂	Tailor	20/40	20/40	Yes	H, H-A	37	Post-pol cat.	None	None	Tailor, various departments, 25 years
99	39, ♂	Carpenter	20/65	L. P.	Yes	H-A	7	Corneal scars	Some	Considerable; not empl. as car.	In dynamite explosion; lost one eye; farming last 5 years; work on farm
100	42, ♂	Carpenter	20/65	20/200	No	H	12	Right eye, cor. scars; left eye, amblyopia	None	Not lost day in 4 years	Right eye hit by flying nail; has done cabinet work

* In this column, ♂ indicates male; ♀, female.

that would reduce it to 20/60, acuity would be reduced to the extent that is a distinct impairment to efficiency for many occupations. Obviously, the latter injury cannot be regarded as solely responsible for the incapacity, but the final incapacity must de due to the accumulated effect of all.

FINDINGS

An analysis of these 100 cases will reveal the following pertinent and interesting facts regarding age, sex, number of years defective, refraction, occupation, general nature of cause for visual defect, and the degree of visual acuity. All these facts have some bearing on the further study of these persons in connection with their earning ability.

Age.—These persons range from 10 to 75 years of age. Fifteen were under 21, and ten were over 65. Seventy-five per cent. were therefore in their years of greatest vigor and earning ability.

Sex.—Thirty are women and seventy are men.

Years Defective.—All the persons included in the tabulated list had defective vision for at least one year, and most had had their defect much longer, many having had the visual defect ten, twenty or more years. In each case, sufficient time had elapsed to permit that person to become at least partially accustomed to the altered visual acuity and thereby to learn how to make most use of his eyes despite the defect.

Refraction.—Visual acuity recorded in every case represents the best vision obtainable with correcting glasses. There are twenty-four cases of moderate myopia (less than —2. S.), (one, Case 21, had —6. S.), seven were emmetropic and fifty-nine hypermetropic.

Occupation.—There are seven students; five professional men, including two librarians, one physician, one lawyer and one judge; eighteen with nonprofessional occupations, including six wives working at home; six clerks or sales people, two merchants, two policemen, and two farmers; sixty-five are classed as skilled workers, this list including two stenographers, one proofreader, two mail clerks, and three deliverymen or truck drivers. The other skilled workers were employed as draftsmen, tailors, painters, electricians, elevator operators, mechanics, tool makers, machine operators, mill workers, carpenters, engineers, molders, bakers and road builders. The tabulated cases include only five nonskilled laborers, so that all except five required the use of good eyesight for their work or employment.

Visual Defects.—In every case of moderate myopia or myopic astigmatism included in this tabulation. there was found always some cause other than the myopia for the defective vision. Twenty-four cases of this class are included. The cases were selected in order to include as great a variety of visual defects as possible. In general the visual defects may be divided into two classes: the congenital defects and the acquired defects. Of the former there are forty-two cases, thirty-two being amblyopias and ten congenital cataracts. Of the latter, the acquired defects, there are fifty-eight cases. These include corneal opacites, conical corneas, glaucoma, choroiditis, retinitis, vitreous opacities, senile and traumatic cataract, tobacco amblyopia, optic atrophy, iritic exudates, and irregular astigmatism.

Working Ability and Earning Capacity.—A perusal of these tabulated cases will reveal that no patient had any loss either to his working or to his earning ability until visual acuity fell at least to 20/65 Sn. in the better eye. A visual acuity of 20/40 Sn. or 20/50 Sn. or 20/60 Sn. had in no case proved a sufficient impediment either noticeably to lessen efficiency or to lessen earnings. However, in my experience, when vision is reduced to these degrees by some recent lesion, there is experienced at first some degree of difficulty and a loss of efficiency, which is always overcome within a few months. This is true also when vision is reduced to much lower ranges.

Visual Acuity

39	had maximum acuity of	20/40	in the better eye
21	had maximum acuity of	20/50	in the better eye
12	had maximum acuity of	20/65	in the better eye
5	had maximum acuity of	20/70	in the better eye
8	had maximum acuity of	20/100	in the better eye
6	had maximum acuity of	20/200	in the better eye
1	had maximum acuity of	20/250	in the better eye
1	had maximum acuity of	20/320	in the better eye
5	had maximum acuity of	10/200	in the better eye
1	had maximum acuity of	5/200	in the better eye
1	had maximum acuity of	3/200	in the better eye

A reduction of acuity to 20/60 Sn. is the beginning of the threshold of permanent partial loss to efficiency. This is shown in Case 89, that of a watch maker who continued at his work until the acuity in the better eye fell below 20/60 Sn. Patient 99, a carpenter, with vision of 20/65 Sn. in one eye and light perception in the other, could not work at his trade. Yet Patient 100, with not better vision than 20/65 Sn., said that he had not lost a day in four years and was working at his trade. There were fifteen additional persons with vision of 20/65 or 20/70 Sn., none of whom experienced any permanent difficulty with their work or any loss in earnings, and some were employed at fine near work.

Of the eight persons who had an acuity of 20/100 Sn. in the better eye, I found that five had experienced no loss in earnings. Two of these five did work that was not fine and three did fine work, one being employed as a clerk and bookkeeper, one as a machinist, and one being a college student, all working without conscious difficulty. Of the two in this class, Patients 14 and 91, who were incapacitated, one was a lineman who, following a severe electric shock, developed retinitis and cataracts. After removal of the cataracts, in the better eye there was obtained finally a vision of 20/100 Sn. The other person (Patient 91) had considerable trouble with school work, but finished one year of high school. He never could get a "good" or satisfactory job, and his wages were always low. In the first case there were complications, and the second person was of low intelligence.

Of the fifteen persons having not better than 20/200 Sn. in the better eye, three (26, 33 and 49) were totally incapacitated, two (31 and 76) were partially incapacitated, and ten continued at their particular occupations despite the handicap of poor vision. Of those totally incapacitated, Patient 26, an elevator operator, continued at his job until his acuity fell to 10/200 Sn. Patient 33, a shoemaker, gave up his employment, operating a machine, when vision fell to 20/200 Sn. in both eyes. Patient 49, a camera factory worker, resigned when his acuity fell to 10/200 Sn. Of those partially incapacitated, Patient 31, a painter, worked at his trade with an acuity of 10/200 Sn. in each eye by securing work directly, but he could not get work through an employer or contractor; and Patient 76, after working a number of years as a skilled mechanic, found it necessary to

give up this kind of employment when vision fell to 20/200 Sn. in each eye, but was able to operate a factory elevator for five years with this degree of visual acuity.

Of the ten remaining persons who continued at their work with acuity in the better eye of 20/200 Sn. or less, one was a school child (Patient 24), aged 10, with an acuity of 20/250 Sn. in each eye who had finished three lower grades in school. Two (Patients 25 and 27) were policemen, both continuing at their work until visual acuity fell to 10/200 Sn. One (Patient 29) worked for twelve years without loss of any time or pay as a stationary engineer, with an acuity of 20/200 Sn. in each eye. A farmer, a baker and a clerk (Patients 67, 84 and 93), each with vision of 20/200 Sn. in the better eye, continued at their work without serious difficulty. One (Patient 68), a wife and housekeeper, did all her own housework, with an acuity of only 3/200 Sn. in the better eye and only field vision in the other. There remain two remarkable cases, 88 and 30. Both happen to be cases of tobacco amblyopia with complications. The former patient was a librarian who continued at his post, which required the reading of many books, consulting card indexes and the constant daily use of his eyes, until his acuity fell to 20/320 in each eye. He used a very near glass—a 6 inch focus—and in addition a hand magnifying lens. The second was a driver and deliveryman who continued to drive his horse all about the city and deliver orders of goods, with a central visual acuity of only 5/200 Sn. in each eye. He had done this with no better vision for more than three years while under my observation. His vision had been poor for several years prior, as he had nuclear cataracts in addition to his tobacco amblyopia. Of course, both man and horse were familiar with the job.

COMMENT

Familiarity with the kind of work to be performed is a valuable asset to those having defective sight. When one has become accustomed to some particular operation on a machine or other process of labor, he may continue at the same employment successfully and efficiently, whereas the same person would not be able to take up new employment, even when the nature of the work might require a less degree of visual acuity. Although some men may continue at their old employment with a 20/200 Sn. or less, such would always have considerable difficulty in securing new jobs, and do have difficulty with new and unfamiliar kinds of work.

There is still another aspect of our theme. Many employers will retain an old and faithful employee, without reduction in wages, even when it is known that such an employee has defective vision and difficulty with his work. However, in the study of these tabulated cases I have focused our attention on the kind of work actually accomplished by the worker and his ability to accomplish his particular task, and have not regarded full pay as always meaning full visual efficiency.

The length of time that the defect in sight has existed and the rapidity of its onset are factors of importance in considering visual working ability. It seems clear that those who have congenital defects, causing a lowered degree of visual acuity, overcome their handicap and learn to work more efficiently than do those who suffer visual losses later in life after having had good or normal vision, so that the older one is when vision becomes defective by accident or by disease, the more difficult it is to make efficient use of the remaining vision. Nevertheless, I have found that many (mostly those under 50), even with acquired visual impairment, and even when the impairment was serious, from 20/200 to 20/320 Sn., can in the majority of instances be employed in some productive capacity with earning power. Time, encouragement and some degree of pertinacity are required to rehabilitate these. Eighty per cent. of the patients had substantial visual earning power with an acuity not better than 20/200 Sn. and not less than 20/400 Sn. A 10/200 Sn. was the point of total incapacity for all except two, who should be regarded as exceptional and extraordinary.

I wish to call attention to those persons having an acuity not better than 20/40 Sn., as this point in the Snellen scale is often regarded as marking the crisis in vision. By some, this notation is regarded as expressing one-half vision or half blindness, simply because the visual angle by which the 20/40 Sn. is measured is twice the size of the Snellen unit. In the tabulation there are sixty persons having a 20/40 or a 20/50 Sn., and not a single one of these experienced any loss whatever either in ability to use the eyes or in earning capacity. From the point of view of efficiency or usefulness, a 20/40 Sn. does not express one-half vision, no matter how fine the work may be at which such an acuity may be employed. The Snellen standard unit, one minute visual angle, represents an average normal; therefore it is correctly inferred not only that many persons have a normal visual acuity better than this, but also that many have less acuity as their normal.

Statistics of visual acuity defects compiled by the Surgeon General's Office[4] show that 22.58 per thousand of all men called by the draft during the late war had less than a 20/40 Sn. in the better eye, since this number was rejected solely because of defective acuity, the minimum visual requirements for acceptance in the unlimited service being a 20/40 Sn. in each eye with correction, and less than this being a cause for rejection. My own statistics, obtained by a complete survey of one factory, the data being obtained by Dr. Kennedy, are in substantial agreement with the foregoing; i. e., between 2 and 3 per cent. of our population have not better visual acuity than a 20/40 Sn., which is normal for these persons. In no sense are these half blind or only 50 per cent. efficient. A 20/40 Sn. is a handicap for new men seeking employment in various lines of public service, as many railroads and electric service roads have made rules that fix a standard visual acuity for new employees. This rule does not apply to old employees already in service. Most railroads do not consider a 20/40 Sn. as a cause for demotion even for first class locomotive engineers.

SUMMARY

1. No loss to earning ability even for the highly skilled work was found until visual acuity was reduced to 20/60 Sn. The threshold for the beginning of visual disability as reflected in earning ability lies between 20/60 and 20/100 Sn.

2. The accumulated effect of repeated trivial injuries must not be ignored from an economic point of view for those cases in which a single injury does not reduce

4. "Defects Found in Drafted Men," Surgeon General's Office, Government Printing Office, 1920.

acuity to 20/40 or less, as repeated injuries of the same degree may finally cause loss to earning capacity.

3. A 20/200 Sn. caused a total incapacity to 13.3 per cent. and a partial incapacity to an additional 13.3 per cent, so that 26.6 per cent. in this class with vision of not better than 20/200 Sn. were either completely or partially incapacitated for earning. Eighty per cent. had earning capacity with acuity between 20/200 and 20/400 Sn.

4. A 10/200 Sn. was the point of visual acuity reduction which became the point of total incapacity in all except two cases, and this may be regarded as the lowest limit of visual earning capacity.

5. The threshold of total incapacity lies between 20/200 and 2/200 Sn., depending on the nature of the employment, age of the defective person, the duration of the subnormal vision, and on his individuality (his will to work).

6. An acuity of not better than 20/40 Sn. in the better eye does not cause a loss of 50 per cent. either in efficiency or in earning ability. This degree of acuity, in fact, causes no direct loss to earning capacity. However, its direct influence from two economic points of view must be considered: (1) that of the accumulated effect of these degrees of loss due to repeated injury, and (2) the effect of such degree of substandard vision on the competitive ability.

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ABSTRACT OF DISCUSSION

DR. JOHN A. DONOVAN, Butte, Mont.: Compensation has become a very serious subject. Juries are giving terrific verdicts, and beware—each one of us is constantly liable to become the prey of these vultures who are forever looking up and advising lawsuits—the grasping corporations, the labor unions whose sole teachings are less work, more pay—never once do they advise as we do, efficiency, but always what? Read the reports coming from their conventions. Lastly, the public, never considered, never even interested, yet it pays all the bills. It is the public that we here should represent. In every village is the man of note, reading the law at a distance of 3 inches with his myopic eye, and with his hypertropic eye supervising the neighbors. The man with 20/60 vision who has told that he needs no glasses, that he can tell a horse from a cow a mile away, is telling the truth. We could leave this room and within twenty minutes find twenty men in whom, if they slowly lost vision down to 20/40, even if they themselves knew it, it would never make the difference of one single penny in their earning ability throughout the remainder of their lives. Who has not seen the derelict, totally unable to work, move off to greener fields the day following receiving a large compensation? Of course I am not talking of the really honest man for whom no law is necessary. The factors of quality of work, earning, competitive and saving ability, contributory negligence, all ultimately should be entered as factors in our table. Consider the high myope, ignorant of any visual defects, the astigmatic patient and even the hyperope, who by squinting sees sufficiently. Then we supply one of these with glasses after careful examination under a cycloplegic, and the patient suddenly enters a new world, but never again, as he tells his innumerable friends, can he see without glasses as he could before the drops were used. He does not, and does not want to, understand. One may record 20/25, and another man with the same patient will record 20/20, and a third man equally careful may record 20/30—all in the same patient, and all are absolutely right. Men come to me because the examiner in another division rejected them for train service. I request their reappointment, and vice versa. Who was right and at which time? We who have to deal daily with claim agents and claim attorneys of our employers and yet must give satisfaction and advise conscientiously our patients, anticipate the difficulty of making any iron bound standards, yet know it must be done. Many a man has a blind eye for months before he finds it out.

DR. E. E. HOLT, Portland, Maine: Dr. Snell refers to me as an authority on the amount of vision that may be lost without affecting the earning ability. This standard was largely based on the work of Magnus on Visual Economics as translated by Wurdemann, a work of great value on the subject of which it treats. In working out the efficiency of the various degrees of subnormal visual acuity, we should realize that we must be guided not by the extremes, but by the law of averages, the same as that on which the life table is based. Dr. Snell speaks of the effect of the visual efficiency of various degrees of subnormal visual acuity on the earning ability. Of course the ultimate effect is on that, but the first effect is on the other indispensable factor of the earning ability, namely, the competing ability, thus obtaining the two factors of the earning ability which are necessary to solve the compensation problem by mathematics in a scientific manner. Visual efficiency has no earning ability unless it is put to work in some vocation and thereby acquires a competing ability; and the two together make the product, namely, the earning ability. At the Industrial School for the Blind at Portland, I was struck with the great efficiency and competing ability of one of the boys, who was totally blind, as he sat at a typewriter writing out dictations as fast as the ordinary person talks. He took out a sheet of the typewritten letter in which he had purposely left out a letter in a word, and he put it back into the typewriter and put in the proper letter in the word so quickly that it was astounding. so that person with extreme loss of vision may acquire great competing ability and thereby have a corresponding earning ability. But it is not so much on their poor vision, but on their competing ability to do the work in spite of the poor vision, or, as in the case of the boy in the Industrial School for the Blind, with no vision.

DR. EDWARD JACKSON, Denver: We have had many discussions about methods of measuring visual acuity and demonstrations that a certain visual acuity meant something with reference to disability. But Dr. Snell has taken a very important step in setting the example of studying the patient with diminishing visual acuity and finding out the facts in the individual case, as to whether that diminution of visual acuity caused diminution of efficiency in their work and their earning ability. It is something that every individual ophthalmologist will have to take up, before his testimony will help a great deal, as to the effect of an injury to the eye, on the financial production of the person who has been injured. To gain an understanding of what we are talking about, it will help to try with our own eyes what we can see and what we can do, with a certain visual impairment, artificially produced for the purpose. This question was brought up before the committee of the Colorado Ophthalmological Society, with regard to the case of a claimant for blind benefits. The standard had been established that the vision must be below 1/10, in order to entitle any person to blind benefit. This woman had very noticeable optic atrophy, pallor of the optic disks and shrinking of the vessels, that showed with the ophthalmoscope. But her neighbors said she could play cards, that indeed she had made a living at teaching card playing to seeing persons. The question of playing cards is simple to decide: Just try cutting down your own vision to 1/10 and then see whether you are able to play cards. I tried it on myself and on other people, and I find with 1/10 vision one can see the cards readily. If we study carefully along the lines that Dr. Snell has indicated, how much people with impaired vision can learn to do, it will give us a better mastery of these problems that are increasing in importance every day.

DR. ALBERT C. SNELL, Rochester, N. Y.: The measurement of acuity is not the measurement of the physiologic function of macular vision. As Dr. Jackson has mentioned that the expression "1/10 vision" is not an accurate statement. I think we should get into the habit of expressing our notations which have a precise meaning. If we mean 1/10 Snellen we should say that. The Snellen notation is one of comparative

acuity, and not a fractional expression of vision. If we say 1/10 Snellen we shall be using a scientific terminology and we shall not be open to the criticism of expressing visual acuity in fractional terms when we do not mean to express fractional vision.

CHEMICAL ANALYSIS OF SWEAT

A PRELIMINARY STUDY *

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Previous investigations on the chemical analysis of sweat have been handicapped because of the inability to obtain sufficient quantity, and because, until recent times, chemical methods were inexact. Hence, there are few studies in the literature bearing on this subject.

In 1900, Hoelscher,[1] made a rather extensive analysis of human sweat, investigating chiefly the nitrogenous elements; as he nowhere mentions his chemical methods, however, the value of his observations is questionable.

In 1911, Riggs [2] made a short study of six normal cases, using more exact chemical methods. Perhaps the most valuable contribution along this line was made by Plaggemeyer and Marshall.[3] These authors investigated eighteen normal fluids for nitrogenous constituents, comparing the excretory power of the skin with the kidneys. Their results in part are expressed in terms of total nitrogen, whereas it seemed to us more desirable to determine the nonprotein nitrogen, so that a comparison could be made with the blood. The average urea nitrogen per hundred cubic centimeters in their series is slightly higher than in ours.

Before attempting to investigate the chemistry of sweat in disease, it is obvious that a normal must be established.

We were concerned chiefly with the nonprotein nitrogen and urea. Urea is the principal end-product of protein metabolism. The nonprotein nitrogen includes those nitrogenous substances remaining after the protein has been precipitated, embracing chiefly urea, amino-acids, ammonia and creatinin. In an examination of five specimens, we were unable to determine the presence of uric acid either qualitatively by the murexid test or by Benedict's direct quantitative method as applied to blood.

In addition, we determined the total solids, which embrace chiefly protein, the nitrogenous elements mentioned above, and salts.

PROCEDURE

Method of Collection.—The subjects chosen for sweating were patients entering the dermatologic clinic of the University Hospital. The normals presented no dermatoses and were healthy young adults on a well balanced diet. The sweat was collected about two hours before lunch and was analyzed within an hour following collection. After a short cleansing bath, the subject was placed in bed between two rubber sheets. Since in two instances urine contaminated the sweat, the patient was warned in this respect. Four hot water bottles were placed on each side below the lower rubber sheet, and the subject was covered generously with blankets. One-fifth grain (0.01 gm.) of pilocarpin was injected subcutaneously, and fluids were forced. The patient remained in the sweat bath for about an hour and a half. This time was sufficient to collect amounts as high as 690 c.c. of sweat. When the patient was removed from the bath, care was taken not to lose any of the sweat. At this time, blood was drawn for a nonprotein nitrogen determination and a urinalysis was made. In every instance, the urine examination was negative.

TABLE 1.—*Normal Sweat*

No.	Blood Nonprotein Nitrogen per 100 C.c., Mg.	Time Hr.	Time Min.	Amount, C.c.	Total Solids per 100 C.c., Gm.	Nonprotein Nitrogen per 100 C.c., Mg.	Nonprotein Nitrogen in Total Solids, per Cent.	Nonprotein Nitrogen per Hour, Mg.	Urea Nitrogen per 100 C.c., Mg.	Urea Nitrogen in Total Solids, per Cent.	Urea Nitrogen per Hour, Mg.	Urea Nitrogen in Nonprotein Nitrogen, per Cent.
1	49.1	1	45	30	2.200	200.0	9.00	34.1	63.0	2.86	10.8	31.50
2	41.6	1	40	170	1.200	98.0	8.16	99.9	58.0	4.83	59.1	59.18
3	39.5	1	45	75	1.480	96.7	6.55	41.4	30.6	2.06	13.1	31.63
4	37.6	1	20	100	1.460	88.8	6.08	66.6	34.2	2.34	25.6	38.51
5	35.3	1	10	100	0.600	80.0	13.30	69.0	40.0	6.60	34.1	50.00
6	34.2	1	15	130	0.960	74.7	7.79	93.6	30.6	3.18	31.8	40.96
7	28.5	1	30	280	0.600	70.0	11.66	131.0	42.0	7.00	78.4	60.00
8	34.4	1	30	150	0.900	82.0	9.10	82.0	35.0	3.70	28.2	42.68
9	30.7	1	30	220	0.680	60.0	8.82	88.0	35.0	5.15	51.4	58.33
10	31.5	1	30	80	0.670	56.0	8.35	29.8	37.0	5.59	20.0	66.97
11	33.5	1	10	170	0.800	50.0	5.80	78.0	21.0	2.40	30.6	42.00
12	30.1	1	10	275	0.644	48.0	7.45	11.3	21.8	3.30	52.0	44.37
13	37.5	1	30	250	0.580	38.0	6.55	62.4	20.0	3.44	34.0	52.63
14	38.2	1	30	600	0.714	28.0	3.92	112.0	14.0	1.96	56.0	50.00

As obtained for analysis, the sweat was a slightly turbid fluid, as a result of the admixture of dirt and epithelial débris. In order to remove this, the sweat was filtered. This filtrate was analyzed for total solids, urea nitrogen and nonprotein nitrogen, according to the following procedure:

Methods of Analysis.—The methods devised by Folin and Wu for the analysis of blood were used with slight modification. In the precipitation of the blood protein, according to the original method, the blood is diluted with 7 volumes of water and 1 volume each of sodium tungstate and sulphuric acid added. Since sweat is already a very dilute fluid, further dilution was inadvisable. Hence, the precipitation was made by adding 1 volume of sodium tungstate to 2 volumes of sweat and then adding drop by drop 1 volume of a 0.66 normal sulphuric acid. This mixture was shaken for fifteen minutes, and filtered until a clear filtrate was obtained. The filtrate gave a negative biuret test for protein.

One cubic centimeter portions of this tungstic acid filtrate were used for the determination of nonprotein

* Studies and contributions of the Department of Dermatology and Syphilology of the University of Michigan, service of Dr. Udo J. Wile.
* Read before the Section on Dermatology and Syphilology at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

1. Hoelscher, J. H.: A Study in Perspiration—Original Research in One Hundred and Thirteen Cases, J. A. M. A. **32**: 1352 (June 17) 1899; New York M. J. **70**: 296, 1904.
2. Riggs, L. W.: J. M. Res. **19**: 285, 1911.
3. Plaggemeyer, H. W., and Marshall, E. K., Jr.: A Comparison of the Excretory Power of the Skin with That of the Kidney Through a Study of Human Sweat, Arch. Int. Med. **13**: 159 (Jan.) 1914.

nitrogen and urea nitrogen according to the usual Folin-Wu technic.

The total solids were obtained by evaporating to dryness 5 c.c. of filtered sweat in a weighed crucible at 90 C.

RESULTS OF INVESTIGATIONS

The results of our investigations are expressed in the accompanying tables.

Table 1 gives a detailed account of the fourteen normal specimens examined and, in addition, the nonprotein nitrogen per hundred cubic centimeters of blood.

The percentages of nonprotein nitrogen and urea nitrogen in the total solids are so variable as to be of little comparative value.

In order to determine whether the injection of pilocarpin altered the composition of sweat, five fluids were examined without injecting the drug. Table 2 gives our results in these cases. Although the amounts of nonprotein nitrogen and urea nitrogen per hundred cubic centimeters of sweat are lower than the normals in which pilocarpin was used, the amounts excreted hourly are practically the same.

TABLE 2.—*Normal Sweat; No Pilocarpin*

No.	Blood Nonprotein Nitrogen per 100 C.c., Mg.	Time Hr.	Time Min.	Amount, C.c.	Total Solids per 100 C.c., Gm.	Nonprotein Nitrogen per 100 C.c., Mg.	Nonprotein Nitrogen in Total Solids, per Cent.	Nonprotein Nitrogen per Hour, Mg.	Urea Nitrogen per 100 C.c., Mg.	Urea Nitrogen in Total Solids, per Cent.	Urea Nitrogen per Hour, Mg.	Urea Nitrogen in Nonprotein Nitrogen, per Cent.
1	30.7	1	30	570	0.940	32.0	7.94	121.9	20.0	4.95	76.0	62.34
2	30.0	..	50	100	0.866	57.1	6.59	68.5	33.3	4.61	39.9	58.36
3	28.5	1	45	325	0.622	39.2	6.30	72.8	25.4	2.41	47.2	64.83
4	36.3	1	15	100	0.834	55.9	6.70	44.7	33.3	3.99	26.6	59.56
5	32.0	1	15	130	0.690	66.6	9.66	69.3	41.0	5.95	42.7	61.64

TABLE 3.—*Senile Eczema*

No.	Blood Nonprotein Nitrogen per 100 C.c., Mg.	Time Hr.	Time Min.	Amount, C.c.	Total Solids per 100 C.c., Gm.	Nonprotein Nitrogen per 100 C.c., Mg.	Nonprotein Nitrogen in Total Solids, per Cent.	Nonprotein Nitrogen per Hour, Mg.	Urea Nitrogen per 100 C.c., Mg.	Urea Nitrogen in Total Solids, per Cent.	Urea Nitrogen per Hour, Mg.	Urea Nitrogen in Nonprotein Nitrogen, per Cent.
1	37.5	2	..	90	1.28	81.0	6.71	38.7	50.0	3.90	22.5	58.13
2	29.6	1	45	30	0.90	62.4	6.93	10.6	32.0	3.55	6.0	51.28
3	35.2	1	15	80	1.44	54.0	3.73	34.4	24.2	1.67	15.4	44.81
4	37.2	1	30	135	0.76	47.0	6.18	42.3	25.6	3.36	23.0	54.46
5	28.6	1	30	400	0.86	31.2	4.29	99.4	24.0	2.76	64.0	64.41
6	29.7	1	25	600	0.65	33.0	5.01	16.0	13.0	1.97	6.9	39.39

TABLE 4.—*Psoriasis*

No.	Blood Nonprotein Nitrogen per 100 C.c., Mg.	Time Hr.	Time Min.	Amount, C.c.	Total Solids per 100 C.c., Gm.	Nonprotein Nitrogen per 100 C.c., Mg.	Nonprotein Nitrogen in Total Solids, per Cent.	Nonprotein Nitrogen per Hour, Mg.	Urea Nitrogen per 100 C.c., Mg.	Urea Nitrogen in Total Solids, per Cent.	Urea Nitrogen per Hour, Mg.	Urea Nitrogen in Nonprotein Nitrogen, per Cent.
1	31.7	1	40	300	0.530	30.0	5.66	54.0	20.9	3.95	37.7	69.60
2	24.4	1	50	260	0.646	46.5	7.19	65.9	28.5	4.42	40.5	61.42
3	30.1	1	20	140	0.760	51.7	6.80	54.3	31.5	4.15	33.1	61.04
4	23.1	1	40	300	1.492	39.7	2.66	71.5	24.0	1.60	42.0	60.41
5	27.2	1	20	170	0.590	46.8	7.94	59.7	26.7	4.53	45.5	57.13
6	36.3	1	30	370	0.370	40.5	10.90	95.5	22.2	6.00	54.2	54.81

TABLE 5.—*Miscellaneous*

No.	Blood Nonprotein Nitrogen per 100 C.c., Mg.	Time Hr.	Time Min.	Amount, C.c.	Total Solids per 100 C.c., Gm.	Nonprotein Nitrogen per 100 C.c., Mg.	Nonprotein Nitrogen in Total Solids, per Cent.	Nonprotein Nitrogen per Hour, Mg.	Urea Nitrogen per 100 C.c., Mg.	Urea Nitrogen in Total Solids, per Cent.	Urea Nitrogen per Hour, Mg.	Urea Nitrogen in Nonprotein Nitrogen, per Cent.
1	30.2	1	30	135	0.88	48	5.40	43.2	26	2.90	23.4	54.66
2	44.1	1	30	100	0.66	26	3.93	32.8	18	2.72	22.8	69.22
3	35.8	1	30	170	0.64	34	5.35	38.8	17	2.79	20.2	52.07

It will be seen that the composition of sweat as regards the amounts of nonprotein nitrogen and urea nitrogen per hundred cubic centimeters varies within rather wide limits. The nonprotein nitrogen ranges from 28 mg. to 200 mg. and the urea nitrogen from 14 mg. to 63 mg. per hundred cubic centimeters. It is also evident that the amount of sweat excreted bears no definite relationship to the amounts of these substances. For this reason, we were of the opinion that the best index of the excretory power of the skin could be obtained by a comparison of the amounts of nonprotein nitrogen and urea nitrogen excreted hourly.

We were particularly interested in the possible relation of the faulty excretion of sweat to the general breakdown, especially of the cardiorenal system that occurs in so-called senile eczema. In this particular condition, it might readily be assumed, as a result of the general arteriosclerosis with its associated chronic nephritis, that a failure of excretion of the nitrogenous elements through the skin might occur, and that thus held back, these substances could act as irritating factors in the production of the dermatitis.

In addition, we investigated six cases of psoriasis and three miscellaneous cases, embracing one case each of lymphoblastoma, eczema in an adult, and scarlet fever.

Table 3 gives a detailed account of the six senile eczema cases studied.

Table 4 gives our results in the six psoriatic cases investigated.

Table 5 shows in detail the three miscellaneous cases examined.

Table 6 gives a summary of our results expressed in amounts per hundred cubic centimeters. We found that the normal average nonprotein nitrogen per hundred cubic centimeters of the sweat is over twice that in the blood and that the urea nitrogen tends to be a little higher. The percentage of urea nitrogen in the nonprotein nitrogen of sweat is approximately the same as in blood.

TABLE 6.—*Summary Amounts in One Hundred Cubic Centimeters of Sweat*

Diagnosis	No. of Cases	Blood Nonprotein Nitrogen per 100 C.c. Range, Mg.	Blood Nonprotein Nitrogen per 100 C.c. Average, Mg.	Solids Range, Gm.	Solids Average, Gm.	Nonprotein Nitrogen Range, Mg.	Nonprotein Nitrogen Average, Mg.	Urea Nitrogen Range, Mg.	Urea Nitrogen Average, Mg.
Normal... (pilocarpin)	14	28.5 to 49.1	30.1	0.580 to 2.200	0.967	28.0 to 200.0	76.4	14.0 to 63.0	34.4
Normal... (no pilocarpin)	5	28.5 to 36.3	31.5	0.404 to 0.866	0.680	32.0 to 66.6	50.2	20.0 to 41.0	30.6
Senile eczema	6	28.6 to 37.5	32.9	0.658 to 1.448	0.985	33.0 to 86.0	53.2	13.0 to 50.0	28.1
Psoriasis	6	23.1 to 30.3	28.8	0.370 to 1.492	0.831	30.0 to 51.7	42.5	20.9 to 31.5	25.6
Miscellaneous	3	35.8 to 44.1	39.7	0.640 to 0.880	0.727	26.0 to 48.0	36.0	17.8 to 26.0	20.6

Table 7 shows the amounts of nonprotein nitrogen and urea nitrogen eliminated per hour in the fourteen normal cases and in the dermatoses examined, and in addition the percentage of urea nitrogen in the nonprotein nitrogen.

TABLE 7.—*Elimination of Nonprotein Nitrogen and Urea per Hour*

Diagnosis	No. of Cases	Nonprotein Nitrogen per Hour Range, Mg.	Nonprotein Nitrogen per Hour Average, Mg.	Urea Nitrogen per Hour Range, Mg.	Urea Nitrogen per Hour Average, Mg.	Urea Nitrogen in Nonprotein Nitrogen Range, per Cent.	Urea Nitrogen in Nonprotein Nitrogen Average, per Cent.
Normal (pilocarpin)	14	29.80 to 181.00	78.23	10.80 to 78.40	37.50	31.50 to 66.97	47.77
Normal (no pilocarpin)	5	44.76 to 121.90	75.47	26.64 to 76.00	46.50	58.36 to 64.83	61.34
Senile eczema.....	6	10.68 to 99.40 (42.30)	40.26 (28.40)	6.00 to 64.00 (22.00)	22.76 (14.00)	39.39 to 58.13	52.06 (50.14)
Psoriasis.....	6	54.00 to 96 55	66.84	33.14 to 54.20	42.18	54.81 to 69.60	60.73

As compared with the normal, the amounts of nonprotein nitrogen and urea nitrogen excreted hourly in the six eczema cases are appreciably diminished. This difference is more marked if we exclude from the eczema group one case that showed values abnormally high compared with the other five. The average urea nitrogen and nonprotein nitrogen excreted per hour, excluding the eczema case in which abnormally high values were obtained, is expressed in parentheses.

It is of interest to note that if we exclude the case of eczema in which such high values were obtained, the greatest amount of nonprotein nitrogen and urea nitrogen excreted per hour in senile eczema is lower than the smallest amounts excreted in the psoriatic cases.

The six cases of psoriasis examined show no appreciable change from the normal.

The three miscellaneous cases show a distinct decrease in the output of nonprotein nitrogen and urea nitrogen when compared to the normal. However, this series is too small to have any statistical value.

CONCLUSIONS

From the foregoing study, there is an apparent diminution in the output of nitrogenous elements of the sweat in so-called senile eczema.

This interesting finding may have an important bearing on the etiology of this condition.

The disturbance of salt metabolism, as expressed in the urine in chronic nephritis, may have its analogue in the sweat. The study of the salt output in sweat must be undertaken, therefore, to determine whether this bears, together with the nitrogenous elements, on the etiology of this condition.

ABSTRACT OF DISCUSSION

DR. J. FRANK SCHAMBERG, Philadelphia: Work of this kind will tend to increase the dignity of dermatology and will serve to indicate to others working in endocrinology and pathology that our members are doing work of fundamental character. His work is of great interest and I think the undertaking is worthy of comment. Ordinarily, the blood urea nitrogen is about one half of the nonprotein nitrogen, and I observe that this is primarily true when pilocarpin has been given, and when it has not been given the urea nitrogen exists in a much higher degree than the nonprotein nitrogen. I presume that unless there was the greatest care of the rubber sheet, and so on, the nonprotein nitrogen might be increased and that therefore the urea nitrogen is the most important guide to the nitrogenous constituents in the sweat. I was interested and somewhat astonished to hear that no uric acid was found in the sweat. I have no doubt as to the accuracy of the methods employed and that this is a definite finding, but I would suggest that Dr. Barney in his further studies keep this in mind. Adler found uric acid in the sweat and said it was present in about one-tenth the amount excreted in the urine, almost three times that present in the blood. The figures relating to the existence of nitrogenous contents in the blood in eczema are extremely interesting and may be of value in determining the etiology of the disease, and yet I think we should be very cautious before forming conclusions in view of the small number of cases under observation. I understand that this is a preliminary report and is so designated, and that no definite conclusions are to be drawn from it. The figures are suggestive and should be followed up, for anything that throws light on such a stubborn condition as senile eczema will be of great assistance in therapeutics.

DR. E. E. SMITH, New York: About twenty-five years ago I was interested in some studies on sweat and particularly the presence of uric acid in sweat. I made a very careful study, but failed to find uric acid present in any instance.

DR. GEORGE C. ANDREWS, New York: I should like to ask whether Dr. Barney has found any differences in the sweat from different parts of the body, and whether the changes in the chemical content of the sweat secretion compared with the chemical changes in the blood. It seems to me that Plaggemeyer and Marshall found very little analogy between the changes in the blood and in the sweat. They were quite distinct.

DR. WILLIAM ALLEN PUSEY, Chicago: Dr. Schamberg said that such papers add to the dignity of dermatology. I might add, also to the complexity of dermatology. With the way these youngsters are coming on, this section bids fair to

become within a few years a school for the nestors of the section. We are having a great deal of discussion now as to how to prepare our successors in dermatology. It seems to me that the work which is being done by the young men turned out by Wile and Wende and others leaves nothing to fear for the future. I know of nothing more impressive than these young men rising on the shoulders of their predecessors and then flying away. Within a few years we shall have a society of young dermatologists with the older ones trying to get in. I heartily congratulate Dr. Osborne and Dr. Barney on the work they have been doing.

Dr. Robert E. Barney, Ann Arbor, Mich.: Replying to Dr. Andrews, we paid no particular attention to the parts of the body from which sweat was obtained. This is a very interesting thought and perhaps at some future time we may investigate that phase. As to the analogy between the blood and sweat changes, there was no parallelism between the two.

THE PATHOLOGY OF PEPTIC ULCER OF THE STOMACH *

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This review will be confined to a consideration of the peptic ulcer, round ulcer or simple gastric ulcer, and will omit that interesting group of acute ulcers, all discussed by Schultze,[1] which occur in acute infectious disease or which result from passive hyperemia with petechiae, from erosion by foreign bodies and other causes, and which tend to heal rapidly and leave no serious after-effects. The peptic ulcer is acute in its early stages but is peculiar in that it tends to persist and become chronic, heals slowly if at all, and may exhibit several dangerous complications and sequels.

GROSS MORBID ANATOMY

The peptic ulcer is usually a single, round or oval, sometimes distinctly elongated elliptic ulcer, situated in the posterior wall of the pyloric portion of the stomach near the lesser curvature. Except in the earliest stages, the ulcer is deep, may show a "punched out" appearance, may be funnel shaped or "terraced," usually has somewhat elevated, firm, sometimes overhanging edges, and is indurated about the base and margins. Aschoff [2] and Stromeyer [3] emphasize the fact that, in many of the terraced or conical ulcers, the edge nearer the pyloric orifice is flattened or less steep than the other parts of the margin, presumably because of the rubbing of food as it enters and passes through the narrow pyloric portion of the stomach. The peritoneal surface opposite the early ulcers often shows a local fibrinous exudate which ultimately results in fibrous adhesions between the stomach and neighboring structures. In from 5 to 10 per cent. of the cases, the ulcers are multiple, there usually not being more than two. Gruber and Kratzeisen,[4] however, report that 40 per cent. of ulcers are multiple. Only 6 per cent. are in situations other than the so-called ulcer-bearing area.

Since subtotal gastrectomy for ulcer has been practiced, much more in detail has been learned about peptic ulcer than was possible with necropsy material. With material from a large number of subtotal gastrectomies, Askanazy [5] has described the newer pathology of peptic ulcer, which we have been able to confirm by the study of ten cases in which operation was done by Dr. M. E. Blahd. It can now be said that, although the base of large chronic ulcers may be relatively clean, most ulcers are covered, and partly filled in, by an adherent granular or slimy, pale, bloody or brown tinged exudate. Under this is a layer of gelatinous, pallid or sometimes brown tinged, moderately firm material, made up of necrotic and granulation tissue. The next layer is of firm scar tissue, which, if sufficiently extensive, may, by its retraction, produce serious permanent deformity of the stomach. Hyperemia is common not only around the ulcer but often throughout most of the part of the stomach removed surgically. Hemorrhage is frequent in the exudate in the earlier ulcers and may occur in other places in the mucosa and submucosa. Chronic hypertrophic gastritis is a common, but not constant, accompaniment.

MICROSCOPIC APPEARANCE

Although, on the basis of necropsy material, peptic ulcer was formerly regarded as exhibiting little or no acute inflammation, the study of surgical material permits ready confirmation of Askanazy's observation that acute exudative inflammation is constant in the early stages. Our material includes peptic ulcer in the early stage, when there is merely loss of surface epithelium, through intervening stages to large chronic ulcers, one of which shows carcinomatous transformation. It is easily possible to find the four zones of Askanazy; namely, zones of exudation, of fibrinoid necrosis, of granulation and of cicatrization.

The exudate may be purulent, sanguinopurulent, fibrinopurulent or occasionally catarrhal. Polymorphonuclear leukocytes, which are common in the exudate occupying the surface of the ulcer, may collect in small circumscribed masses, and are also found in the zones of necrosis and granulation as well as in the surrounding mucosa and deep in the wall of the stomach. Sometimes lymphoid and plasma cells predominate. Eosinophils are often present in small numbers, but may be found in all the coats of the stomach near the ulcer. Fibrin is frequently present in the exudate on the surface of the ulcer. Fibrinous exudate may occur on the serosal surface in association with even early shallow ulcers. Hyperemia, often with edema, is common. Minute hemorrhages in the exudate, in the ulcer and in the neighboring mucosa, are frequent, as the result either of the inflammatory hyperemia or of rupture of vessels in the granulation tissue.

The zone of fibrinoid necrosis, which is grossly a gelatinous material, varies in thickness and in constitution. In addition to the ordinary cytoplasmic and nuclear changes of necrosis, there are hyaline masses which react chromatically as does fibrin. There are, however, no network, no nodules, no asters, to characterize it as fibrin. Fibrinoid material is variable in amount but may be present in ulcers of any stage. According to Askanazy, it is probably derived from the fixed connective tissue, which becomes hyaline as it undergoes necrosis.

Granulation tissue, variable in extent and not different from granulation elsewhere, appears early in the course of the ulcer and is usually still present in large,

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1. Schultze, W. H.: Die Pathologie des Magens, Lubarsch-Ostertag Ergebn. d. allg. Path. u. path. Anat. (Part 1) **20**: 488, 1922.

2. Aschoff, L.: Pathologische Anatomie, Ed. 5, Jena, 1921.

3. Stromeyer, F.: Die Pathogenese des Ulcus ventriculi, zugleich ein Beitrag zur Frage nach den Beziehungen zwischen Ulcus und Karzinom, Beitr. z. path. Anat. u. z. allg. Path. (Ziegler's) **54**: 1, 1912.

4. Gruber, G. B., and Kratzeisen, E.: Beiträge zur Pathologie des peptischen Magen- und Zwölffingerdarmgeschwürs, Beitr. z. path. Anat. u. z. allg. Path. **72**: 1, 1924.

5. Askanazy, M.: Ueber Bau und Entstehung des chronischen Magengeschwürs, sowie Soorpilzbefunde in ihm, Virchows Arch. f. path. Anat. **234**: 111, 1921; **250**: 370, 1924.

old, chronic ulcers. The zone of necrosis often advances at the expense of the granulation zone.

When an ulcer is accompanied by well marked cicatrization, it is usually a deep ulcer that involves the muscular coats. The interruption of continuity of mucosa, and other coats, implies also an interruption of continuity of blood vessels and nerves. The density of the scar appears to inhibit regeneration of the smooth muscle.

Acute lymphoid hyperplasia is frequent, especially in the earlier stages, and involves not only the nodules in the stomach but also the neighboring lymph nodes.

OTHER MORPHOLOGIC FEATURES

An examination of the features pointed out above shows that the peptic ulcer does not differ essentially from other ulcers in inflammatory reaction. The situation and nature of the lesion demand special consideration of the disturbances of blood vessels and nerves.

The vascular lesions include inflammations, sclerosis and hypertrophy. Acute periarteritis, with its perivascular infiltration of polymorphonuclear leukocytes, lymphoid and plasma cells, and acute arteritis with penetration of these cells into the vascular wall, are common in and about the earlier ulcers. Similarly, chronic lesions may occur with older ulcers. Endarteritis deformans and obliterans are frequent. These may be due to inclusion of the intima in the inflammation of the vessel walls or to thrombosis with organization and even canalization. Numerous observers have noted the frequency of arteriosclerosis. Ophüls [6] found it not only in older patients but also occasionally, apparently localized to the stomach, in young individuals. Askanazy, however, has found ulcers in patients of from 50 to 60 years or more without sclerosis of the gastric vessels. Hypertrophy of the media is rare in our experience.

As the ulcer extends and penetrates, the intrinsic nerves are severed. We have not observed this local acute neuritis, but subacute and chronic neuritis and perineuritis are common not only in the ulcer margins but also at some distance from the ulcer. In the scar tissue, Askanazy found a reduction in number of ganglion cells and loss of myelin sheath of many of the fibers. In the older ulcers, the nerve fibers may become elongated and coiled to produce masses closely resembling the amputation neuroma. If the pain of ulcer is due to irritation or exposed inflamed nerves, the relief by administration of alkali can be explained by temporary neutralization of acid.[7] The administration of magnesium sulphate probably acts through its depressant action on the nerves.

Peptic ulcers tend to penetrate rather than to extend widely laterally. Crohn, Weiskopf and Aschner,[8] by roentgenoscopic examination, find that the ulcer reaches its maximum size in a few weeks, and does not further increase in lateral diameter.

In many of the early ulcers, there is a fairly widespread acute gastritis, which may be superimposed on the chronic hypertrophic gastritis, which, in our experience, accompanies a large number of ulcers of all stages.

In addition to the marginal hyperemia, edema, hemorrhage and inflammation, the epithelial cells show cloudy swelling, mucinous degeneration with goblet cell formation, necrosis and multiplication. Mitotic figures are not infrequent. The more extensive multiplication of epithelium may result in papilliform projections about the margin of the ulcer or in extension downward of epithelial growth into the deeper tissues. Possibly this downward growth is responsible for the development of cancer. There are intermediate stages in which it is often difficult to distinguish between epithelial hyperplasia and tumor growth.

HEALING

There is no doubt that even chronic ulcers may heal, as demonstrated in scars observed especially in postmortem specimens. The roentgenoscopic observations of Crohn, Weiskopf and Aschner [8] show that the crater often fills in, but this is no evidence of true healing. Ivy,[9] on the basis of experimental work, regards the healing as taking place in two stages; the first, a stage of organization and consolidation of the defect with infolding and apposition of mucosal cells to the organizing tissue; the second, a stage of regeneration of mucosa. Griffini and Vassale [10] long ago pointed out the striking regenerative capacity of the gastric mucosa. New glands are formed from the cells of preexisting glands, and the acid cells represent a differentiation of the primary gland cells. Tunica propria grows, and a complete mucous membrane is formed.

COMPLICATIONS

Numerous complications may arise. Hemorrhage is so frequent as to be regarded as a symptom. The larger hemorrhages are probably often due to a necrosis that involves blood vessels. The necrosis may extend so rapidly that protective thrombi are not secure and are easily displaced by peristalsis, distention or increased blood pressure. General peritonitis following perforation is not as common as it might otherwise be, because of the protective adhesions that form as a result of the early localized fibrinous peritonitis.

There is no doubt that cancer follows peptic ulcer. The chief problem concerns the frequency rather than the possibility of this sequel. Wilson and MacCarty [11] reported that 71 per cent. of peptic ulcers show cancerous change. It is conceivable, however, that among the cancers in this series there were included cases that might be interpreted by others as inflammatory epithelial proliferation. MacCarty [12] subsequently stated that all ulcers exceeding a diameter of 25 mm. might be expected to show cancer. Extraordinary care must be taken, as indicated by Moskowitz,[13] before cancer can be excluded from the pathologic diagnosis, but in one of the ulcers in our material which measured 30 by 25 mm., there was no cancer. Ewing [14] found that only 5 per cent. of ulcers show cancer. The infrequency of cancer is also emphasized by Gruber [15] and Gruber and

6. Ophüls, William: The Relation of Gastric and Duodenal Ulcer to Vascular Lesions, Arch. Int. Med. **11**: 469 (May) 1913; Gastric Ulcers in Rabbits Following Resection of the Pneumogastric Nerves Below the Diaphragm, J. Exper. Med. **8**: 181, 1906.

7. Ortmayer, Marie: Gastric Motor Activity in Patients with Peptic Ulcer, Arch. Int. Med. **35**: 423 (April) 1925.

8. Crohn, B. B.; Weiskopf, S., and Aschner, P. W.: The Life Cycle of Peptic Ulcer, Arch. Int. Med. **35**: 405 (April) 1925.

9. Ivy, A. C.: Contributions to the Physiology of the Stomach, LII, Studies on Gastric Ulcer, Arch. Int. Med. **25**: 6 (Jan.) 1920; Studies on Gastric and Duodenal Ulcer, J. A. M. A. **75**: 1540 (Dec. 4) 1920.

10. Griffini, L., and Vassale, G.: Ueber die Reproduction der Magenschleimhaut, Beitr. z. path. Anat. u. z. allg. Path. **3**: 425, 1888.

11. Wilson, L. B., and MacCarty, W. C.: The Pathological Relationship of Gastric Ulcer and Gastric Carcinoma, Tr. A. Am. Phys. **24**: 593, 1909.

12. MacCarty, W. C.: Does Cancer Arise in Chronic Gastric Ulcer? J. A. M. A. **79**: 1928 (Dec. 2) 1922.

13. Moskowitz, L.: Ueber einen Fall von jungem "Ulcuscarcinom" des Magens, Virchows Arch. f. path. Anat. **253**: 511, 1924.

14. Ewing, J.: The Relation of Gastric Ulcer to Cancer, Ann. Surg. **67**: 715 (June) 1918.

15. Gruber, G. B.: Beitrag zur Frage nach den Beziehungen zwischen Krebs und peptischem Geschwür im oberen Digestionstract, Ztschr. f. Krebsforsch. **13**: 105, 1913.

Kratzeisen.[4] Clinically, Smithies,[16] and also Moynihan [17] and others, find that a large percentage of cancer cases give a history of preceding ulcer. Friedenwald [18] could not support this view, and Taylor and Miller [19] were able to disclose such a history in only 17 per cent. of their 182 cases of cancer. Pathologically, no information of importance can be obtained by the examination of widespread cancer, and clinically the history of symptoms may be due to the cancer itself. In the peptic ulcers we have studied, the incidence of early cancer does not exceed 10 per cent.

Cicatricial deformity of the stomach, stenoses and small diverticula are too well known to require discussion in this paper.

PREDISPOSING CAUSES

From a study of necropsy material,[20] females are found to be more commonly affected than males. Martin [21] gives the average age for males as 36.7 years and for females 27.1 years. The lesion may, however, occur at any period of life. Draper's [22] studies indicate that one type of individual is more susceptible to peptic ulcer than to gallbladder disease. There is no clear cut evidence that neurotic persons are more susceptible than others, and in any consideration of this feature the difficulty of clinical differentiation between peptic ulcer and neurosis must always be borne in mind. In the material of Gruber and Kratzeisen, peptic ulcer is no more common among victims of grastroptosis than among others. It is difficult to say that anemia predisposes to ulcer, since the ulcer may be responsible for the anemia. Ivy,[9] however, finds that, in animals, exhausting disease seems to be important in the persistence of ulcer and perhaps also in its origin. Pappenheimer and Larimore [23] discover a high incidence of gastric ulcer in animals on deficient diets. The frequent occurrence of gastritis, acute and chronic, suggests the influence of these lesions as predisposing.

EXCITING CAUSES

When any disease is ascribed to so many causes as is peptic ulcer, there is great probability that no one cause is responsible. It is difficult, however, to define the interrelations of the various possible causes. In the following discussions, there will be a consideration of the more outstanding features that have been disclosed by clinical, pathologic and experimental studies.

FAULTS OF SECRETION

It is now well known that peptic ulcer is not accompanied by a constant alteration of the acidity of the gastric juice. Nevertheless, it is conceivable that at the time of origin of the ulcer there may have been a significant change of acidity. By anastomosis of the stomach and the small intestine, so that unneutralized acid comes in direct contact with the intestinal mucosa, Mann [24] observed the production of peptic ulcers that tend to become chronic. It is doubtful that these studies can be applied to peptic ulcer of the stomach, since, as Matthes [25] has shown, the intestinal mucosa is more susceptible to the deleterious action of hydrochloric acid than is the gastric mucosa. Small islands of intestinal mucosa are occasionally found in the stomach, but the incidence of these heterotopic inclusions is probably much less than that of peptic ulcer. That gastric mucosa offers some special disposing characters is indicated by the peptic ulcers in gastric mucosa isolated in Meckel's diverticulum.[26] Ivy [9] found that when caution is employed in the application of gastro-enterostomy clamps, duodenal ulcers do not occur. The ulcers in Mann's animals are probably not traumatic in origin. Mann's studies, however, are of great value as concerns human gastrojejunal ulcer, for, in the experience of Moynihan,[27] subtotal gastrectomy, with the coincident removal of the acid secreting part of the stomach, practically eliminates the chance of recurrence of the gastric ulcer and of the development of gastrojejunal ulcer. Ivy and his collaborators [28] produced chronic ulcers by doses of roentgen irradiation which coincidentally depress secretion. That hyperacidity leads to persistence of the gastric ulcer is doubtful in view of the frequent incidence of anacidity in patients, but the problem has not as yet been solved experimentally because no permanent neutralization, and therefore no control state, has been effected.

Clinically, it is believed that stasis of gastric contents is important in producing chronicity of the ulcer, and this is supported by the experiments of Bolton,[29] of Friedman and Hamburger,[30] of Ivy,[9] and of others. Bolton considers that this is due to the general irritability of the gastric contents. Sweet and his collaborators [31] take the view that the traction of hyperperistaltic muscle on the margins of the ulcer delays healing. Ivy has demonstrated such hyperperistalsis and has also shown that manipulation of an ulcer in an exposed pouch delays healing. Hyperacidity might dispose to persistence of the ulcer by stimulating peristalsis, but hyperperistalsis can occur in partial obstruction without hyperacidity. Thus, although hyperacidity may play a part in some instances, it is not a necessary feature in the persistence of peptic ulcer.

VASCULAR LESIONS

Although the conical shape of the ulcer suggests that it is due to infarction, the same form might be due to greater destruction of the mucosa and submucosa than of the more resistant deeper coats. Vascular occlusion might be due to spasm, to endarteritis, to thrombosis,

16. Smithies, Frank: The Etiological Relationship Existing Between Gastric Ulcer and Gastric Cancer, Illinois M. J. **31**: 149 (March) 1917; Gastric Ulcer Without Food Retention, Am. J. M. Sc. **145**: 340, 1913; Observations upon the Nature, Diagnosis and Clinical Management of Gastric Ulcer, ibid. **166**: 781 (Dec.) 1923.
17. Moynihan, B. G. A.: The Pathology of the Living and Other Essays, Philadelphia, 1910.
18. Friedenwald, J.: A Clinical Study of One Thousand Cases of Cancer of the Stomach, Am. J. M. Sc. **148**: 660, 1914.
19. Taylor, S. P., and Miller, T. G.: An Analysis of One Hundred and Eighty-Two Cases of Cancer of the Stomach, with Special Reference to the Incidence of Preexisting Ulcer, Am. J. M. Sc. **162**: 862 (Dec.) 1921.
20. Kaufmann, E.: Lehrbuch der speciellen pathologischen Anatomie, Eds. 7 and 8, Berlin and Leipzig, 1922. Gruber and Kratzeisen (Footnote 4).
21. Martin, C. F.: Organic Diseases of the Stomach, in Osler, William; and McCrae, Thomas: Modern Medicine, Philadelphia, Ed. 2, **3**: 168, 1914.
22. Draper, G.: Human Constitution, Philadelphia, W. B. Saunders Company, 1924.
23. Pappenheimer, A. M., and Larimore, L. D.: The Occurrence of Gastric Lesions in Rats and Their Possible Relation to Dietary Deficiency, Proc. Soc. Exper. Biol. & Med. **21**: 141, 1923.
24. Mann, F. C., and Williamson, C. S.: The Experimental Production of Peptic Ulcer, Ann. Surg. **77**: 409 (April) 1923.
25. Matthes, M.: Untersuchungen über die Pathogenese des runden Magengeschwüres und über den Einfluss von Verdauungsenzym auf lebendes und totes Gewebe, Beitr. z. path. Anat. u. z. allg. Path. **13**: 309, 1893.
26. Humbert, Y.: L'ulcère peptique du diverticule de Meckel, Ann. d'anat. Path. med.-chir. **1**: 521, 1924.
27. Moynihan, B. G. A.: Two Lectures on Gastric and Duodenal Ulcer—A Record of Ten Years' Experience, Bristol, 1923; Problems of Gastric and Duodenal Ulcer, Brit. M. J. **2**: 221 (Feb. 10) 1923.
28. Ivy, A. C.; McCarthy, J. E., and Orndoff, B. H.: Studies on the Effect of Roentgen Rays on Glandular Activity, IV, Effect of Exposure of Abdominal and Thoracic Areas to Roentgen Rays on Gastric Secretion; Note on Roentgen Cachexia, J. A. M. A. **83**: 1977 (Dec. 20) 1924.
29. Bolton, C.: The Experimental Production of Gatric Ulceration by the Injection of Gastrotoxin, Lancet **1**: 1330, 1908; The Influence of Diet upon the Formation and Healing of Acute Ulcer of the Stomach, Brit. M. J. **2**: 1963, 1910; The Rôle of the Gastric Juice in the Pathology of Gatric Ulcer, ibid. **2**: 1288, 1912; The Origin of Chronic Ulcer of the Stomach in the Acute Variety of the Disease, Quart. J. Med. **5**: 429, 1911-1912.
30. Friedman, J. C., and Hamburger, W. W.: Experimental Chronic Gastric Ulcer, J. A. M. A. **63**: 380 (Aug. 1) 1914.
31. Sweet, J. E.; Buckman, L. T.; Thomas, A., and Bell, E. M.: The Pathogenesis of Peptic Ulcer, Arch. Surg. **6**: 837 (May) 1923.

to bland embolism or to septic embolism. Vascular spasm will be referred to in the discussion of neuromuscular influences. Acute and chronic endarteritis with thrombosis are common, but it is impossible to say whether they are primary or secondary. Arteriosclerosis is common, but even though it may be local in the stomach of young persons,[6] it is not usually a severe disease at the average age of ulcer incidence, and it is sometimes absent in older victims of ulcer.[6] As shown by Litten,[32] and by Ivy, bland embolism of the gastric arteries, without other lesions, does not produce infarction. The injection, by Cohnheim,[33] of lead chromate, and by Payr,[34] of alcohol and of formaldehyd, led to infarction, but in these experiments there is, in addition to the occlusion of the arteries, an associated direct destruction of tissue. Although, as Berlet[35] has shown, the vascular supply of the pyloric portion of the stomach is poorer than in the cardiac end, infarction is rare in the human stomach, is usually massive, and occurs, as Baumann[36] points out, only when additional vascular lesion reduces the normally rich anastomosis. The result of an infective embolism is to be regarded as an abscess rather than an infarct. It is of interest that those diseases in which bland embolism is common, such as endocarditis and thrombosis, rarely show associated peptic ulcer, and the same is true of septicemias and pyemias.

PARASITES

Various organisms have been found in gastric ulcer, but interest centers about molds and certain bacteria, especially the anhemolytic streptococcus. Molds are common, and Askanazy reports the production of peptic ulcer by their injection. Kratzeisen,[37] confirming Hartwich,[38] regards the molds as saprophytes or symbions that merely tend to delay healing, but Kirsch and Stahnke[39] were unable to establish this view experimentally. Turck's[40] report that feeding of colon bacilli produces gastric ulcer has not been confirmed.

Rosenow[41] states that the "usual ulcer of the stomach and of the duodenum in man is primarily due to a localized hematogenous infection of the mucous membrane by streptococci," a view supported by Nakamura,[42] Haden[43] and others. McMeans[44] was unable "to support the view of elective affinity expressed by Rosenow." Celler and Thalheimer[45] could not convince themselves that anhemolytic streptococci "have been proven as yet to be the factor which either initiates the ulcer or prevents healing." Although many organisms have a certain tissue selectivity, as, for example, the pneumococcus, the gonococcus, the diphtheria bacillus and the dysentery bacillus, these are examples of species rather than strains within a species. The novel hypothesis of strain selectivity requires extraordinarily strong and indubitable support. Holman[46] emphasizes the difficulty in isolating streptococci in pure culture, a fact now well established and not in accord with the rapidity of isolation in Rosenow's work. Equally important is the fact that Rosenow worked with cultures from supposed atria of infection more often than from gastric ulcers. Ulcers were produced in 60 per cent. of the rabbits inoculated, but the number of animals employed allows of a considerable error from random sampling, and it is important to note that ulcers were not produced in 40 per cent. of the inoculated rabbits. Holman[47] has demonstrated that streptococci are extremely common nonexperimental invaders of laboratory and other animals, and may locate in many tissues where local conditions are favorable. Hence, the recovery of streptococci in experimental animals cannot be accepted as necessarily significant. In order to establish the hypothesis of Rosenow, it would seem essential to be absolutely sure of pure cultures, preferably from the ulcer itself rather than from a supposed atrium of infection, to work with animals in which the incidence of nonexperimental invasion is low, to produce ulcers almost constantly, and to recover an organism that can be identified as that which was injected. These criteria may seem severe, but when a revolutionary hypothesis is advanced, it must meet the most rigid criticism before it can be accepted, even though from many points of view it may be exceedingly attractive.

NEUROMUSCULAR INFLUENCES

Von Bergmann[48] points out the possibilities that spasm of muscularis mucosae or of arteries, or both, might cause ischemia and consequent ulcer. Spasm in the retinal arteries may persist long enough to interfere with nutrition, but this principle cannot be conclusively applied to the stomach in view of the unlikelihood of infarct, as pointed out in discussing the vascular lesions. Spasm might be due to acute neuritis of the stomach wall, but although it is possible that this lesion may be primary, it is probably much more often secondary. Mogilnitzkie[49] found atrophy of ganglion cells and gliosis in the sympathetic system of four ulcer patients; but, without controls in other patients, the observation is of questionable value. Bedarida[50] injected neurin, which paralyzes motor nerve terminals, into the stomach and produced ulcers. It is impossible to state that the paralysis caused the ulcer because similar treatment by a wide variety of nonparalyzing agents has the same

32. Litten, M.: Ueber die Folgen des Verschlusses der Arteria mesaraica superior, Virchows Arch. f. path. Anat. **63**: 289, 1875.
33. Cohnheim, J. F.: Lectures on General Pathology, New Sydenham Society, 1889-1890.
34. Payr, E.: Beiträge zur Pathogenese, pathologischen Anatomie und radicalen operativen Therapie des runden Magengeschwürs, Arch. f. klin. Chir. **93**: 436, 1910.
35. Berlet, K.: Ueber die Arterien des menschlichen Magens und ihre Beziehungen zur Aetiologie und Pathogenese des Magengeschwürs, Frankfort. Ztschr. f. Path. **30**: 472, 1924.
36. Baumann, A. W.: Ueber den hemorrhagischen Infarkt des Magens, hervorgerufen durch embolischen Verschluss arteriellen Magengefässe, Inaug. Diss., Munich, 1909.
37. Kratzeisen, E.: Ueber die Soorfrage in Verbindung mit dem peptischen Magen- und Duodenalulcus, Virchows Arch. f. path. Anat. **255**: 273, 1925.
38. Hartwich, A.: Ueber das Vorkommen von Soor im chronischen Magengeschwür, in hämorrhagischen Erosionen und Magencarcinomen, Virchows Arch. f. path. Anat. **241**: 116, 1923.
39. Kirsch, E., and Stahnke, E.: Pathologischanatomische, klinische und tierexperimentelle Untersuchungen über die Bedeutung des Soorpilzes für das chronische Magengeschwür, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **36**: 174, 1923.
40. Turck, F. B.: Ulcer of the Stomach: Pathogenesis and Pathology, J. A. M. A. **46**: 1753 (June 9) 1906.
41. Rosenow, E. C.: The Causation of Gastric and Duodenal Ulcer by Streptococci, J. Infect. Dis. **19**: 333 (Sept.) 1916; Etiology of Spontaneous Ulcer of Stomach in Domestic Animals, ibid. **32**: 384 (May) 1923; The Specificity of the Streptococcus of Gastroduodenal Ulcer and Certain Factors Determining Its Localization, ibid. **33**: 248 (Sept.) 1923.
42. Nakamura, T.: A Study on Focal Infection and Elective Localization in Ulcer of the Stomach and in Arthritis, Ann. Surg. **79**: 29 (Jan.) 1924.
43. Haden, R. L., and Bohan, P. T.: Focal Infection in Peptic Ulcer, J. A. M. A. **84**: 409 (Feb. 7) 1925. Haden, R. L.: The Elective Localization of Bacteria in Peptic Ulcer, Arch. Int. Med. **35**: 457 (April) 1925.
44. McMeans, J. W.: Concerning the Gastric Lesions Observed in Experimental Bacteremia, Arch. Int. Med. **22**: 114 (July) 1918; Experimental Bacteremia, ibid. **22**: 617 (Nov.) 1918.
45. Celler, H. L., and Thalheimer, W.: Bacteriological and Experimental Studies on Gastric Ulcer, J. Exper. Med. **23**: 791 (June) 1916.
46. Holman, W. L.: The Relative Longevity of Different Streptococci and Possible Errors in the Isolation and Differentiation of Streptococci, J. Infect. Dis. **15**: 293, 1914.
47. Holman, W. L.: Spontaneous Infection in the Guinea-Pig, J. M. Res. **35**: 151 (Nov.) 1916.
48. Von Bergmann, G.: Das spasmogene Ulcus pepticum, München. med. Wchnschr. **60**: 169, 1913.
49. Mogilnitzkie, B. N.: Zur Frage der Pathogenese der neurogenen Form des Magengeschwürs, Centralbl. f. allg. Path. u. path. Anat. **35**: 77, 1924-1925.
50. Bedarida, N. V.: Produzione Sperimentale di Ulcera Gastrica, Arch. Ital. di Chir. **9**: 109, 1924.

effect. According to Durante,[51] ligation and section of the splanchnic nerves is followed by gastric ulcer. Ivy[9] found that, although in dogs which died immediately after section of the vagi and splanchnics there were petechiae in the gastric and duodenal mucosa, in those which survived from one week to four months, no gastric or duodenal lesions were found. Molodaja and Egoroff[52] obtained the same results. The relation of hypermotility to healing has been discussed above. The hypermotility is apparently an intrinsic mechanism, enhanced by the presence of functionating extrinsic nerves (Ivy).

ORGANS OF INTERNAL SECRETION

The influence of ductless glands is no clearer in this connection than it is in many others. Biedl[53] noted erosion of the gastric mucosa following injections of epinephrin, but we hold this to be of little significance because of the fact that injection of many other substances may lead to the same lesion. Friedman[54] found ulcers of the stomach in five of twelve dogs subjected to repeated injections of epinephrin. In contrast, Mann[55] found a high percentage of gastric lesions in bilaterally suprarenalized cats and dogs. In forty suprarenalized dogs, Ivy found only one ulcer, although there were twenty instances of petechiae and hemorrhagic erosion. Friedman found ulcers following injection of the thyroid gland and also following partial thyroidectomy. Removal of part of the thyroid and of one suprarenal was not followed by ulcer formation. In those instances in which abdominal operations are necessary for the experiment, trauma to the stomach may occur. Even ether anesthesia may be followed by petechiae and erosions (Ivy). The assumption that partial removal of ductless glands is followed by hypofunction is unjustified. The injection of such substances as epinephrin or thyroid gland does not lead necessarily to a state identical with hyperfunction. The studies of the relationship of disturbances of ductless glands, whether they are supposed to operate directly or through the intermediation of the autonomic nervous system, have not been sufficiently correlated to permit of satisfactory conclusions.

CYTOLYSINS

Of interest are the experiments of Bolton,[29] who prepared a cytolytic immune serum by injecting gastric cells into animals of heterologous species. In his experiments, the serums appear to be highly specific for gastric mucosa, and on injection into the peritoneum or into the gastric mucosa, produce gastric ulcers. Hemolytic immune serum does not have an equally intense effect. We have obtained essentially the same results (unpublished). In order for this to be applicable to man, it will be necessary to prepare serums by injection, not only into the homologous species, but into the same animal. In other words, there must be not merely an isogastrolysin but an autogastrolysin. We have been unable to produce such a serum, and on the basis of other immune phenomena regard it as an experiment with well nigh insurmountable difficulties.

51. Durante, L.: The Trophic Element in the Origin of Gastric Ulcer, Surg., Gynec. & Obst. **22**: 399 (April) 1916.
52. Molodaja, E. K., and Egoroff, B. G.: Ueber Pathogenese der pepticschen Geschwüre, Centralbl. f. allg. Path. u. path. Anat. **35**: 78, 1924-1925.
53. Biedl, A.: Innere Sekretion, Berlin and Vienna, 1913, p. 523.
54. Friedman, G. A.: The Experimental Production of Lesions, Erosions, and Acute Ulcers in the Duodenal Mucosa of Dogs by Repeated Injections of Epinephrin, J. M. Res. **32**: 95, 1915; The Influence of Removal of the Adrenals and One Side Thyroidectomy upon the Gastric and Duodenal Mucosa, etc., ibid. **32**: 287, 1915.
55. Mann, F. C.: A Study of the Gastric Ulcers Following Removal of the Adrenals, J. Exper. Med. **23**: 203 (Feb.) 1916.

Kohler[56] has offered the hypothesis that a deficiency of antipepsin in the blood predisposes to peptic ulcer by removing the resistance to autodigestion of the mucosa, but Orator[57] is unable to confirm this supposition in a study of fifty cases.

SUMMARY

The clinical, pathologic and experimental studies briefly referred to above have not resulted in a final conclusion as to the origin of, or the reasons for persistence of, peptic ulcer. The nature of the lesion has been clarified by the study of fresh material removed by operation. The inaccessibility of the field, the abnormalities produced by rendering it accessible, the complexity of nervous and vascular supply, the unsettled state of knowledge concerning the secretory and motor functions of the organ, the difficulty of establishing a norm of form and function, the differences between lower animals and man—these and other factors have led to pitfalls in investigating the condition. The painstaking care and indefatigable energy of the numerous investigators of the disease have, however, thrown important light on the subject and have prepared the way for further and more fruitful investigations.

In summary, it may be said that pathologically peptic ulcer is an inflammatory lesion so situated that gastric juice probably emphasizes the destruction of tissue. That the inflammation is primary is suggested but not proven. Various predisposing causes seem to be operative in the patients, but these are not conclusively established. The direct exciting cause of the ulcer has not yet been disclosed in such a fashion as to be beyond doubt. The persistence or chronicity of the ulcer depends on a variety of factors, none of which can be said to operate in all cases. Probably several of these factors are coincidentally in evidence. Thus, there must be considered especially hyperacidity, stasis of neuromuscular or obstructive origin, the irritative and traumatic influence of gastric contents, and the traction of muscle about the ulcer.

56. Kohler, H.: Ueber wechselseitige Beziehungen von Magensaft und Blutserum bei Gesunden und Ulkuskranken, Mitt. a. d. Grenzgeb. d. Med. u. Chir. **37**: 87, 1923.
57. Orator, V.: Ueber das pepsin-antipepsin Verhältniss in Magensaft und Blut bei Ulkuskranken und Ulkusfreien, Arch. f. klin. Chir. **134**: 733, 1925.

Filtrability of Vaccinia Virus.—Although the filtrability of vaccinia virus has been the subject of dispute, and many careful observers, including Thomson, who has recently investigated this point, have obtained negative results, there is now no doubt that this virus is capable of passing through filters that hold up the ordinary visible pathogenic bacteria. The chief filter that has been used for this purpose is the Berkefeld, and it is generally agreed that only a small portion of the virus comes through, the bulk of it being retained by the filter. Thus, in course of ten filtering experiments with vaccinia, Rouget only got positive evidence of the presence of vaccinia virus in the filtrate in four, and found it necessary, as others have done, to inoculate large amounts of this filtrate in order to demonstrate the presence therein of the virus. All of the successful investigators appear to have taken great care to obtain the "pulp" as fresh as possible, and to break it up thoroughly. In order to set free the virus from the tissue cells containing it, Negri employed in addition maceration in the cold store for from twelve to sixteen days, a procedure that undoubtedly promotes cellular autolysis. Similarly Nicolle and Adil Bey failed to get passage of the viccinia virus through the Berkefeld filter until they first freed the virus from the tissue cells by submitting the suspension of pulp to digestion with a solution of trypsin for five hours at 38 degrees C.—Special Report No. 98, Medical Research Council, London, 1925.

THE ROENTGENOLOGIC DIAGNOSIS OF PEPTIC ULCER*

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Stripped of its minor details, the routine examination at the Mayo Clinic for all gastric and duodenal lesions comprises two principal features: a bariumized carbohydrate meal to test motility, and a screen examination six hours later, at which time an aqueous suspension of barium is given.

The motor test-meal consists of 2 ounces (62 gm.) of barium sulphate in an equal portion of well cooked cereal, and is given in lieu of breakfast. A retention from this meal after six hours, if no food has been taken meanwhile, is of importance for three reasons: (1) It is strongly indicative of an organic lesion of the stomach or duodenum; (2) in conjunction with certain other phenomena, to be mentioned later, it is diagnostic of duodenal ulcer, and (3) the presence of gastric retention has an important bearing on treatment.

At the fluoroscopic examination, the patient drinks a mixture of 4 ounces (125 gm.) of barium sulphate in 8 ounces (236 c.c.) of water. Special note is taken of the first swallows of the mixture as they descend from the esophagus into the stomach. After a small amount has been taken, the walls of the stomach are approximated by palpatory pressure so that their internal topography can be inspected. Attention is then directed to the duodenum, which usually fills to best advantage early. Its filling is also assisted by grasping the gastric antrum, applying the thumb of the right hand to the greater curvature and the fingers to the anterior wall, exerting pressure toward the pylorus. Blocking the distal portion of the duodenum by manual compression will sometimes be of aid. By pressure over the duodenal bulb, its contents are thinned out to permit inspection of its walls. To perform any of these manipulations effectively, it is essential that the patient's abdominal muscles be relaxed; often this relaxation is assisted by seating him for a short time. After the stomach is filled, the patient is turned to various angles so that the gastric and duodenal contours can be shown in different views. Following this, the patient should be examined on the trochoscope in the prone, supine, oblique, lateral and Trendelenburg positions. To conclude the examination, films are made for purposes of record and for further study.

ROENTGENOLOGIC SIGNS OF GASTRIC ULCER

Gastric ulcer has but one sign on which the diagnosis can be made with confidence, and that is the visualized crater of the ulcer, the niche, or its exaggerated form, the accessory pocket. In favorable situations, the niche is visible as a local prominence on the gastric silhouette. Many ulcers are situated so near the lesser curvature that in the sagittal view the niche projects sufficiently to be visible.

Ulcers on the posterior wall, in the vertical portion of the stomach, may often be brought into profile by turning the patient into an oblique or lateral position. These ulcers are sometimes revealed in the early stages of gastric filling. As the barium stream first enters the stomach, it is likely to fill the crater of an ulcer high on the posterior wall so that its site is marked by a denser circumscribed area. A posterior ulcer in the lower portion of the stomach may be revealed as a local density by approximating the gastric walls.

The accessory pocket of a perforated ulcer which has invaded an adjacent organ is so striking that it will hardly escape recognition. It is seen most commonly as a round or oval shadow projecting from the lesser curvature. Its diameter varies from 2 or 3 cm. upward. Quite often its barium content has a level upper margin capped by a bubble of air.

SECONDARY SIGNS OF GASTRIC ULCER

Secondary signs of gastric ulcer include retention from the six-hour meal, hour-glass stomach (either spastic or organic), local fixation by adhesions, hypotonus and anomalies of peristalsis. These signs are inconstant, and may have causes other than ulcer. When a niche is demonstrable, their aid is not needed. They have a certain importance, however, in two types of ulcer; namely, mucous erosions and prepyloric ulcers.

A mucous erosion is too shallow to produce a recognizable niche. An incisura may point to the site of the ulcer, the rugae may converge toward it, and a residue from the motor meal may enhance suspicion of ulcer. It is imperative, however, to construe these signs with care.

Gastric ulcers in the vicinity of the pylorus, even though the depth of their craters is considerable, are extremely difficult to reveal as true niches. Usually the area around the ulcer is irregular, and there may be a residue from the motor meal. The irregularity is, no doubt, partly spastic and partly organic, but from the picture, it is impossible to determine whether the filling defects are due to a gastric lesion or to gastrospasm from extrinsic causes.

Ordinarily, spasm of the stomach from extrinsic causes will be extinguished by antispasmodics, while that due to an intrinsic lesion will persist. Hence, a second examination should be made after giving an antispasmodic to full physiologic effect. Any deformity that persists at the second examination is either organic or, if spastic, due to a gastric lesion. One exception to this rule is to be noted: gastrospasm associated with duodenal ulcer will persist, but the presence or absence of a duodenal ulcer should be obvious at the first examination.

CARCINOMATOUS ULCERS

Ulcers that reveal only microscopic evidences of cancer and produce niches of ordinary size cannot be distinguished roentgenologically from benign ulcers. Very large ulcers are open to suspicion, for those with a diameter of 2.5 cm. or more are often malignant.

Another variety of malignant ulcer, namely, the frank neoplasm with ulcerous excavation, has roentgenologic characteristics which indicate its nature. Its crater is deep but seldom projects externally to the plane of the gastric mucosa. Surrounding it is an elevated, overhanging ridge of neoplastic tissue. If situated near the lesser curvature and subjected to palpatory pressure, the profile of its crater is crescentic. If situated on the posterior wall, distant from the curvature, the crater is seen during palpation as a central density encircled by a translucent zone. Without exception, ulcers with such features have proved at operation to be malignant.

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ROENTGENOLOGIC SIGNS OF DUODENAL ULCER

The roentgenologic manifestations of duodenal ulcer are of two classes: (1) direct signs, localized to the duodenum, and (2) indirect signs, all of which are gastric.

Direct signs comprise: (*a*) the niche, and (*b*) bulbar deformity without a niche. Usually in the latter case, the niche is too shallow to be visible.

The niche is seldom large and is often extremely small, so that careful observation may be necessary to discover it. Niches are most likely to be found on the mesial border of the bulbar shadow, but they are sometimes on the basal margin, or, very exceptionally, on the lateral border. By manual pressure over the bulb, a niche on the anterior or posterior wall can often be revealed as a small dense fleck within the fainter bulbar shadow.

In most instances, a niche is accompanied by organic or spastic deformity, either in the vicinity of the niche or on the opposite border of the bulb. General deformities seem to be less common when the niche is centrally situated, and it is likely to be overlooked unless the bulb is manipulated as described.

When the bulbar contour is extensively deformed, almost any projecting recess may be assumed to be the niche, and only the most careful comparison with the findings at operation will prove or disprove the assumption. Further, the presence of a niche is not essential for diagnosis, except when no other deformity exists.

Constant deformity of the bulb is the mainstay of diagnosis. At times, cicatricial contraction is largely responsible for it; but, as a rule, it is dominantly spastic and often entirely so. The distortion takes a multitude of shapes. The bulbar shadow may be deformed on one side alone, commonly the mesial side, or on both aspects, or only at the base.

It must be admitted that deformity of the bulbar shadow is not absolutely characteristic of ulcer, and that real or apparent deformity may be due to other causes. When the bulb is but partially filled, the barium may be distributed so erratically that the shadow deformity resembles that of ulcer. By palpatory pressure, the cause of distortion should be obvious, but on single films the deformity might be mistaken for that of ulcer. Inflammatory processes in the region of the duodenum, particularly pericholecystitis, may cause duodenal deformity by adhesions. However, in my experience, less than 2 per cent. of mistaken diagnoses have been attributable to such adhesions. In this connection, it is worthy of mention that extensive adhesions often exist without distorting the duodenal outline. Cancer of the duodenum may produce deformity indistinguishable from that of ulcer, but it is extremely rare. In occasional instances, deformity seems to result from spasm induced by disease of the gallbladder or pancreas, or by more remote lesions, but it occurs so seldom that it may virtually be disregarded. The crescentic indentation of the bulb sometimes produced by the gallbladder, and deformity resulting from pressure of the bulb against the spine, will hardly deceive the examiner.

The indirect signs of duodenal ulcer, which are manifested in the stomach, are interesting, and in certain combinations may be important. Hypertonus is a common feature of nonobstructive ulcer. With the advent of obstruction, the stomach loses its tonicity and becomes enlarged. Hyperperistalsis occurs often. When obstruction is marked, antiperistaltic waves are sometimes seen. Hypermotility, as shown by an advanced position of the motor meal, is observed frequently. Obstructive ulcers cause gastric retention. Gastrospasm is exhibited as an incisura or an antral deformity.

As these secondary signs may be produced by other lesions, none, if taken singly, is diagnostic of ulcer. When bulbar deformity can be demonstrated, their aid is not needed. When obstruction is pronounced, it is difficult or impossible to fill the bulb and establish the fact of deformity. In that event, the combination of a large stomach of normal contour with hyperperistalsis and a six-hour retention is quite as diagnostic of duodenal ulcer as is bulbar deformity.

Ulcers beyond the bulb sometimes set up the triad of signs mentioned, and thus their diagnosis is feasible. In the absence of these signs, local deformities in the distal portions of the duodenum can scarcely be relied on for diagnosis, because of the irregularities of contour produced by the valvulae conniventes in this portion of the bowel. Fortunately, ulcers in this situation are not common.

PEPTIC ULCER FROM THE INTERNIST'S STANDPOINT*

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The old idea that chronic gastric ulcer occurs with much greater frequency than chronic duodenal ulcer has been abandoned since clinicians (especially surgeons) awakened the attention of pathologists to the frequency of the latter lesion. In 1833, the relative proportion of gastric ulcers to duodenal ulcers in necropsy reports was 39:1; in 1870, it became 12:1; in 1913, in Berlin statistics, it had fallen to 1:1. These differences in reported incidence at necropsies appear to have been due partly to negligence of close examination of the duodenum in the earlier periods, partly (before the criteria for recognition of the boundary line between pylorus and duodenum had been established) to the assumption that juxtapyloric ulcers were all of gastric origin. The view, too, that gastric ulcer occurs much more often in women than in men and duodenal ulcer more often in men than in women, has given way to the view of approximately equal incidence of both gastric and duodenal in the two sexes.

ETIOLOGY AND PATHOGENESIS

Despite the enormous number of clinical, pathologic-anatomic and experimental researches directed toward the solution of the problems of etiology and toward the recognition of the successive links in the pathogenic chain of peptic ulcers, much still remains obscure.

How far constitutional and conditional factors are responsible for the origin and for the evolution of these ulcers is being much discussed. On the one hand, familial tendency to ulcer, and the relationships of ulcer to habitus, to diathesis, to vascular (especially capillary) anomalies, to the endocrine make up, and to disharmonies of the vegetative nervous system—all speak in favor of a constitutional predisposition, which invites further investigation. On the other hand, (1) the predominant localization of the ulcers in a special

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narrow pathway in the stomach, in the first portion of the duodenum, and at, or near, the margins of gastro-enterostomy openings; (2) the differences in fate of acute erosions occurring in the regions mentioned and of erosions occurring elsewhere; (3) the relationships of ulcers to the degree of acidity of the fluids that bathe the parts and to the force of propulsion of those fluids; (4) the frequent coexistence of ulcers with foci of bacterial infection (in distant parts of the body as well as in the mucosa of the stomach and duodenum), and (5) the periodicity of exacerbations and recurrences of ulcer symptoms, relative to seasons of the year or to periods of physical and psychic stress and strain—all these are suggestive of the importance of environmental influences (mechanical, thermal, chemical, bacterial and psychic), acting directly or indirectly on predisposed areas of the gastro-intestinal tract. There is fairly general agreement at the moment that, in most cases if not all, a multidimensional etiology is responsible, and that both constitutional and conditional factors play a rôle.

The separation of the problem of genesis into two parts, (1) that of the origin of the primary nutritive disturbance of the mucous membrane that permits of the loss of substance through autodigestion, which we speak of as an "erosion" or "acute ulcer," and (2) that of a gradual transformation of such an acute lesion into a chronic, round and more or less funnel-shaped, indurated ulcer extending into the deeper tissues, would seem to constitute a real advance. Is the nutritive disturbance that permits of autodigestion and gives rise to the acute ulcer dependent on local vascular, neurotrophic, or metastatic toxi-infectious injury? And, once an acute erosion or ulcer has occurred, why is it that it sometimes heals, sometimes undergoes evolution into a chronically progressive lesion that slowly involves the deeper parts?

Contemporary inquiries are being directed to attempts to answer these two important questions. Attention is being focused on: areas of circulatory inferiority due to developmental anomalies of the capillaries or to spasms of smooth muscle; vagosympathetic dysfunctions; local inflammations of the gastric or duodenal mucosa; bacterial agents with selective affinities for special local tissues and areas; reflex disturbances of the secretion of hydrochloric acid and pepsin; alterations of local resistance due to absence of antiferments; vasospasms of neural or endocrine origin; functional-mechanical, thermal, and chemical conditions in the gastric pathway, and traumas from food particles, violently propelled gastric contents, or (in the case of marginal ulcer) the clamps or sutures applied at a preceding gastroenterostomy. The multiplicity of these inquiries alone is revelatory of the doubts that still exist concerning the etiology and concerning the conditions of evolution of the lesions.

SYMPTOMATOLOGY AND DIAGNOSIS

A striking feature of nearly all cases in which a diagnosis of gastric or duodenal ulcer is made is the long history of subjective digestive disturbances that has usually preceded. The patients recall various discomforts—burning, bloating, gaseous eructations, flatulence, heavy feeling in the abdomen, constipation, etc.—that they have experienced, often over a period of years. Many of them have been self-treated or even professionally treated for dyspepsia, indigestion, hyperacidity, constipation or gastro-intestinal neuroses until the advent of severe pain, of nausea or vomiting, of hematemesis or melena has awakened the idea of the existence of a graver malady. In rare instances, a severe hemorrhage or signs of perforation may appear, like a "bolt out of the blue" in patients who assert that they have earlier suffered from no indications whatever of gastric or intestinal disturbance, or that their symptoms have been so mild and transitory that they have not considered them worthy of especial attention.

The majority of patients, certainly, suffer from epigastric pain, and the character of this pain is often very significant, not only for the arousal of the suspicion of the existence of an ulcer but also as giving the clue to the site of the lesion.

In gastric ulcer, the pain is prone to appear as soon as food is ingested or soon afterward, subsiding gradually but appearing again when more food is taken, so that the patient comes to dread eating and often starves himself because of this dread. When the ulcer is at the cardiac orifice, the pain may come during the swallowing of coarser food; when it is at the lesser curvature, it may not appear until from a few minutes to an hour after eating; when it is near the pylorus, the pain may be still later in appearance (though usually within two hours) and is sometimes relieved by vomiting or by gaseous eructations.

In duodenal ulcer, the time of occurrence of the pain and its relation to the ingestion of food are usually very different from the description just given of the behavior in gastric ulcer, for in duodenal ulcer the pain is prone to occur from two to four hours after eating or in the night (hence sometimes called "hunger pain," "late pain," or "nocturnal pain"), and, moreover, if the ulcer is uncomplicated, the pain is immediately and completely arrested by the ingestion of food, a fact soon learned by the patient who carries biscuits in his pocket in the day time and has a glass of milk at his bedside at night in order that he may quickly secure relief. Thus, the patient with duodenal ulcer has no dread of eating; on the contrary, he usually has a good appetite, is prone to eat freely of all kinds of food, and often looks robust and even overnourished.

Nausea and vomiting are more frequently observed in gastric than in duodenal ulcer, but are characteristic of neither.

Though the pains mentioned have been called "typical" of gastric ulcer and of duodenal ulcer, respectively, and are extremely valuable clinical clues, the fact should not be lost sight of that there is in reality no history that is constant for either gastric or duodenal ulcer, since either may be symptomless, hunger pain may sometimes occur in gastric ulcer, and pains closely resembling "ulcer pains" may be experienced in other conditions (cholecystitis, appendicitis, intra-abdominal adhesions, tabes dorsalis, functional gastrospasms, etc.). Moreover, duodenal ulcer and gastric ulcer may coexist in the same patient with corresponding confusion of the "typical" symptomatology. Periodicity of the pain with seasonal recurrence is much more commonly encountered in duodenal ulcer than in gastric ulcer, though it may sometimes be observed in the latter also.

The necessity of caution in the evaluation of the anamnesis is, therefore, obvious. As a matter of experience, the history only rarely deceives us in the case of duodenal ulcer, whereas in the case of gastric ulcer, the most alert diagnostician will frequently be misled if he relies on subjective symptoms alone. It goes without saying, therefore, that every patient suspected of ulcer should be subjected to a comprehensive

diagnostic study, with accumulation of anamnestic, general physical, roentgenologic and clinical chemical data, before judgment is passed on the nature of the conditions existing.

The general physical examination is more helpful in ruling out conditions that may simulate peptic ulcer than in supplying positive indications of ulcer itself. Tenderness at certain pressure points (front and back), evidences of muscular defense in the right upper rectus, and the state of the general nutrition may be of some aid in the recognition of ulcer, but these signs are notoriously unreliable.

Nor dare the study of the stomach contents, of the feces and of the blood be accredited with as much usefulness in the diagnosis of peptic ulcer as many textbooks would lead one to believe. Gastric hyperacidity is usually marked in about three fourths of the cases of duodenal ulcer, whereas in only about one fifth of the cases of gastric ulcer is it exhibited. The acidity conditions, even on fractional analysis, are very variable in both, so much so that one comes, as his experience grows, gradually to rely less, rather than more, on them for diagnostic differentiation. A combination of (1) gastric hypersecretion (gastrosuccorrhea), (2) prolonged emptying time of the stomach, and (3) pylorospasm, the so-called "pyloric syndrome," which can be demonstrated, when it exists, by special examinations of the stomach contents alone, is more or less characteristic of "juxtapyloric ulcer"; but the dangers of passing the stomach tube in patients with either gastric or duodenal ulcer should not be underestimated.

The examination of the feces for occult blood after three days of hemoglobin-free diet is a valuable technical method, but the absence of blood does not exclude ulcer; most ulcer patients that show occult blood in the feces can be made occult blood free by a few days of appropriate medical therapy. An anemia of the secondary type with marked reduction of the hemoglobin content of the blood may give the clue to repeated small hemorrhages from ulcer.

Outspoken hematemesis or melena is strongly suggestive of peptic ulcer but may be due to carcinoma, esophageal varix or hemorrhagic diathesis; even in cholecystitis, in appendicitis, and in splenic anemia, manifest hemorrhage from the gastro-intestinal tract may occur in the absence of ulcer.

The so-called premonitory signs of perforation of an ulcer (feeling of bloating, feeling of intestinal blockage, symptoms of localized peritonitis) should be kept in mind, but experience shows that they only rarely are, in themselves, sufficiently distinctive to serve as prophylactic guides. Too often the excruciating pain and collapse of perforation occur unannounced. The symptoms of "concealed perforation" and of "organ penetration" are difficult of interpretation, certainly without roentgen-ray control.

Roentgenologic studies are, of course, of the utmost importance in confirming and extending the diagnostic data in ulcer. They are dealt with by other speakers in this symposium. But reliance is to be placed on roentgen-ray reports only when they emanate from competent roentgenologists. Every internist has learned to be on his guard against the misleading data supplied by inexpert roentgen-ray observers. Any technician can make plates or roentgenoscopic examinations, but adequate interpretation of what is seen in plates and on the screen is not every man's métier.

THERAPY

General practitioners and consulting internists see ulcers in the earlier stages and more of the milder cases than do the surgeons, whose experience is largely confined to severer cases, later stages, and complications. It is, therefore, easy to understand the difference in the attitude of these two groups with regard to medical therapy and surgical therapy, respectively. As knowledge has grown and as experiences have accumulated, the indications for medical treatment on the one hand and for surgical intervention on the other have become even more precise, and opinions in medical and surgical circles are gradually coming into accord.

All internists now concede that when complications occur that seriously threaten life, surgery should not be delayed. Thus, in cases of perforation (or of threatened perforation), of recurring severe hemorrhage, of organic stenosis, of complicating perigastritis or periduodenitis with adhesions, and of the severer sequelae generally, there can be no question of the necessity of prompt surgical intervention. And in cases in which removal of focal infections combined with well planned and well conducted medical therapy has failed to relieve the symptoms, to prevent frequent recurrences, or to restore a satisfactory state of nutrition, surgical aid should be invoked.

On the other hand, most internists and, I believe, many surgeons favor a fair trial of the more conservative forms of therapy in cases other than those just referred to, and especially in all uncomplicated cases, with the aim (1) of relieving the symptoms, (2) of preventing the progress and of promoting the healing of the ulcer or ulcers present, and (3) of removing as far as possible conditions that might be responsible for the development of new ulcers.

Time will not permit of a discussion of the details of such conservative therapy; only the main principles can be mentioned. The measures to be applied are mainly of a protective nature. Not alone the ulcer should be shielded; the organism as a whole should be guarded from injuries. Hence, diet, physical and psychic rest, and the removal of toxic and infectious influences are the chief means to be employed; foci of infection within the abdomen as well as extra-abdominal foci should receive due consideration.

In planning the dietary, three fundamental features should be borne in mind: (1) the food should be mechanically nonirritating; (2) it should be so chosen and administered as not to increase the hydrochloric acid content of the stomach juice and not to favor hypersecretion, and (3) the food given, while relatively small in volume, should be adequately varied and of a caloric value sufficient to restore and maintain a normal state of nutrition.

Many dietaries have been recommended, but not a few of them deviate from the fundamental requirements just referred to; if used, they should be modified so as to conform to them. Rigid schemes for universal application in ulcer cases are better avoided; the dietary should be individualized to meet each patient's special needs. Any one with a fair knowledge of dietetics should be able to plan a well-balanced diet with no coarse constituents, poor in salt, condiments and extractives, and containing an adequate amount of protein and vitamins, and as much of the calory-rich carbohydrates and fats as may be needed gradually to increase or diminish the body weight to its calculated ideal. Alcohol, tobacco and strong coffee or tea should

be interdicted. Hypersecretion can be combated by making the meals small, with intervals of two hours between them.

At the beginning of treatment, rest should be enjoined; there should be a short period of complete digestive rest and a longer period of total bodily rest (in bed) with protection from all disturbing psychic influences. But milder cases do not require a prolonged period of absolute rest; indeed, the tendency at present, the result of war experience, is to change to an ambulatory regimen much earlier than was formerly thought permissible. Chronic ulcers are not healed in a month or six weeks, even if a patient remains quietly in bed for that length of time. The abolition of symptoms is by no means synonymous with the healing of the ulcer; symptoms can be made to disappear quickly, but epithelization of the surface of an ulcer and healing in its depths with scarring are very long and tedious processes. It is therefore impracticable to keep peptic ulcer patients at rest until the lesions are healed; but a short period of rest at the beginning of treatment is decidedly advantageous.

Drugs have their place in ulcer therapy, but their value has been overestimated and the amounts used have been excessive. Particularly is this true of alkalis, the free and reckless use of which may be attended by dangers of intoxication. Remedies for the alleviation of spasm (belladonna, hyoscyamus, papaverin, phenobarbital) may be given in small but frequently repeated doses. Cautious intravenous injection of foreign proteins have recently been highly vaunted for the speedy alleviation of ulcer symptoms, and would seem worthy of further testing. Pain, vomiting and hemorrhage may require special symptomatic treatment for their control, but are usually easily and quickly amenable.

After the symptoms have been relieved and a normal state of nutrition has been restored, the patient should be kept permanently, that is, for the rest of his life, on a protective regimen, the diet, work and recreation being arranged in conformity with this, while the bodily and mental health generally are kept at as high a level as possible. This advice would seem to be valid even for patients who have resorted to surgical intervention. Might not surgical results in cases of peptic ulcer be far better than they are, if, after operation, the patients were always closely supervised and hygienically directed, according to the principles of medical therapy?

Dilatation of the Heart.—Pure hypertrophy of the heart is of rare occurrence, and it does not produce sufficient enlargement of the heart to be recognized by physical examination. Increase in size of the heart is the result of dilatation of the cardiac chambers, a condition in which the heart contains a much larger amount of blood than normal at the end of systole. One reads in the older textbooks on pathology of a concentric hypertrophy, that is, an hypertrophy without dilatation of the cavities; but it is doubtful whether this ever occurs. In all the cases of hypertrophy of the heart that the student will study in the clinic, the hypertrophy will be combined with dilatation. An increase in the unit volume of blood received in diastole and expelled during systole does not cause a sufficient increase in the size of the heart to be recognized clinically (Straub). In violent exercise the systolic output of blood is greatly augmented, and more blood enters the ventricle during each diastole than occurs in any form of valvular heart disease, no matter how severe the valvular defect may be.—Pratt, J. H., and Bushnell, G. E.: Physical Diagnosis of Diseases of the Chest, Philadelphia, W. B. Saunders Company, 1925.

GASTRIC AND DUODENAL ROENTGEN-RAY FINDINGS AFTER OPERATION *

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My purpose in this communication is to set forth briefly the objectives to be attained by roentgen-ray examination after gastric and duodenal operations, the technic of such examination and some details of the principal findings.

One of the most successful of stomach operations is gastro-enterostomy. In the great majority of cases, it gives brilliant results; nevertheless, every physician having occasion to treat or examine a large gastro-intestinal clientele sees a considerable number of gastro-enterostomized persons who complain of more or less serious postoperative disturbance. Naturally, only the dissatisfied patients return to the clinician, and the internist who sees a considerable number of this class is apt to feel an unjustified lack of confidence in the operation. The foregoing is true, more or less, of all the different forms of operation involving an anastomosis between the stomach and the intestine, as well as the various plastic operations for modification of the pylorus and resection of gastric tumors and gastric and duodenal ulcers.

In 1915, before the surgical section of this association, I [1] presented some roentgen-ray studies on patients who had been subjected to various gastric and intestinal operations. Prior to that date, the outstanding contributions on this subject were by Cannon and Blake, Guibe,[2] Härtel,[3] Outland, Skinner and Clendening,[4] (1913), Hartmann,[5] Cohn [6] and Barsony [7] (1914). In 1915, Carman and Balfour [8] also presented their classical study on gastrojejunal ulcers, which included very interesting and helpful roentgenologic findings. Later, gastroduodenal postoperative roentgen-ray studies have been published by Zollschau,[9] Butsch,[10] Eusterman,[11] Pirie,[12] von Bergmann,[13] Krause,[14] Goetze,[15] Christophe,[16] H. Béclère,[17] Savignac,[18] Hellmer [19] and Moreau and Murdock.[20]

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* From the Surgical Department of the Battle Creek Sanitarium.
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1. Case, J. T.: Roentgen Studies After Gastric and Intestinal Operations, J. A. M. A. **65**: 1628-1634 (Nov. 6) 1915.
2. Guibe: J. de chir. **1**: 1, 1908.
3. Härtel, F.: Die Gastroenterostomie im Röntgenbilde, Deutsch. Ztschr. f. Chir. **109**: 317-395, 1911.
4. Outland, J. H.; Skinner, E. H., and Clendening, L.: A Study of the Mechanism of the Stomach After Gastro-Enterostomy by Means of the X-Ray, Surg., Gynec. & Obst. **17**: 175-183, 1913.
5. Hartmann, H.: Function of the Gastro-Enterostomy Opening in Cases of Permeable Pylorus, Ann. Surg. **59**: 832-840, 1914.
6. Cohn, M.: Die Gastrostomie im Röntgenbild, Fortschr. a. d. Geb. d. Röntgenstrahlen **22**: 377, 1914-1915.
7. Barsony, T.: Beiträge zur Diagnostik des postoperativen jejunalen und Anastomosenulkus, Wiener klin. Wchnschr. **2**: 1058-1062, 1914.
8. Carman, R. D., and Balfour, D. C.: Gastrojejunal Ulcers—Their Roentgenologic Aspects, J. A. M. A. **65**: 227-232 (July 17) 1915.
9. Zollschau, I.: Zum röntgenologischen Nachweis des Ulcus pepticum jejuni, Deutsch. med. Wchnschr. **44**: 177-179, 1918.
10. Butsch, quoted by Carman: The Roentgen Diagnosis of Disease of the Alimentary Canal, Philadelphia, W. B. Saunders Company, 1920, p. 388.
11. Eusterman, G. B.: Clinical Study of Eighty-Three Gastrojejunal Ulcers, Minnesota Med. **11**: 517-525 (Nov.) 1920.
12. Pirie, A. H.: Failures After Gastro-Enterostomy Turned to Success by the Knowledge Furnished by X-Ray Examination, Am. J. Roentgenol. **9**: 358-359 (June) 1922.
13. Von Bergmann: Fortschr. a. d. Geb. d. Röntgenstrahlen **30**, No. 1, 1922.
14. Krause: Fortschr. a. d. Geb. d. Röntgenstrahlen **29**: 641, 1922.
15. Goetze, O.: Fortschr. a. d. Geb. d. Röntgenstrahlen **30**, No. 5, 1922.
16. Christophe, L.: Arch. d. mal. de l'app. digestif. **13**: 625 (July) 1923.
17. Béclère, H.: J. de radiol. et d'électrol. **8**: 193-197 (May) 1924.
18. Savignac, R.: Paris méd. **1**: 37 (Jan. 12) 1924.
19. Hellmer, H.: Acta Radiologica **4**: 35-43, 1925.
20. Moreau, J., and Murdock, J.: Arch. franco-belges de chir. **27**: 568-631 (July) 1924.

VALUE OF POSTOPERATIVE ROENTGEN-RAY STUDIES

Postoperative studies serve various useful purposes:

(*a*) With the modern facilities for bedside roentgen-ray studies so developed that the making of a postoperative roentgenogram need give the patient no discomfort whatever, a roentgen-ray study may be made immediately after an operation in which untoward symptoms that have to do with the mechanics of the stomach develop.

(*b*) Routine postoperative studies shortly after operation, say on the fifteenth to the twenty-fifth day, afford a valuable check to the surgeon and are useful for research.

(*c*) At any time during the first six months after operation, light on new or persisting symptoms may be afforded.

(*d*) Examinations made long after the operation in patient's doing well from a clinical standpoint aid in determining which are the more useful types of gastric and duodenal operations.

The clinical history and, if possible, the details of the operative procedure should be in the hands of the roentgen-ray examiner. It is just as impossible to base one's diagnosis on the roentgen-ray findings alone in the case that has come to operation as in the one that has not. There is, in fact, in the case in which operation has been performed the additional factor of probable postoperative adhesions to complicate the interpretation of the roentgen-ray findings. At all events, examination of the function of the stomach as seen roentgenologically is only a part of the total clinical examination.

TECHNIC OF THE ROENTGEN-RAY STUDY

The examination should be comprehensive, the patient being studied in the frontal and various oblique positions, both erect and lying. In some cases, the ingenuity of the examiner will be taxed to get the patient into a suitable position to study the anastomotic stoma. Sometimes it will be necessary, by the palpating hand or wooden spoon, to lift up the lower border of the stomach during the screen study. The Trendelenburg position may be helpful in an occasional case. The first part of the opaque meal, consisting of from 2 to 4 ounces (62 to 125 gm.) of barium-water mixture, should be administered while the patient is standing in the vertical fluoroscope. With a small quantity of this type of opaque medium, palpation under the fluoroscopic screen is likely to be more fruitful than with the full meal, the administration of which should be deferred until the fluoroscopic studies are almost completed. Observations in various attitudes in the horizontal position should next be recorded. The fluoroscopic study is the most essential part of a postoperative roentgen-ray investigation, but as many films should be exposed as may be necessary to make permanent record of fluoroscopic findings or to give a better view of fine points of detail. Frequent observations are necessary, preferably once an hour, until the stomach has been emptied. Pirie's results show how valuable may be such a careful and prolonged postoperative fluoroscopic study as an aid in the clinical management of cases after operation.

The examiner should remark on the size of the stomach when filled with the usual meal; the direction of the long axis of the stomach (a line adjoining the cardia with the stoma); the vigor and direction of peristaltic waves; the path chosen by the opaque material in leaving the stomach, whether by pylorus (either spontaneously or under pressure of the palpating hand) or by the new opening; whether any of the material backs into the short-circuited loops; how long it takes the stomach to empty; whether the larger part passes out within the first few minutes, three hours or more being required for the remainder, or whether the emptying is more regularly performed. Are there any niches or pockets that remain filled after most of the meal has passed? What is the relation of points of localized pressure pain to the stoma? Is the stomach as mobile as it should be? Are there any filling defects suggestive of recurrent carcinoma?

For the urgent case studied at once after operation when, if it occurs at all, symptoms of gastric stasis become evident, usually within the first forty-eight hours, I do not hesitate to administer from 10 to 20 gm. of barium sulphate stirred in water, which may be given to the patient in spoonful doses or through a duodenal tube. After from one to two hours, by means of the draw sheet, the patient can be lifted enough to place the roentgen-ray film beneath him, and with a bedside roentgen-ray equipment an anteroposterior roentgenogram of the stomach can be made without removing him from his bed. Thus, within from one to two hours, one may obtain positive evidence for or against acute gastric obstruction.

In my surgical work, all patients for gastric and duodenal operation come to the operating table with a duodenal tube already in place. By leaving off the metal tip, there is rarely any difficulty in passing such a tube through the nose, or if already passed by mouth, it is a simple matter to bring the upper end back through the nose by the aid of a small catheter. This tube, useful for keeping the stomach empty and for lavage when indicated, is also useful for the introduction of the opaque material in those cases in which it seems desirable to make a roentgen-ray study from one to two days immediately after a gastro-duodenal operation. The duodenal tube should be removed as soon as gastric lavage through the tube shows the stomach to be emptying itself.

In the postconvalescent study of patients subjected to the ordinary short-loop posterior gastro-jejunostomy, with rare exceptions, the opaque material begins at once to pass through the stoma even before the stomach is filled. In a series of seventy-two gastro-enterostomies, barium was seen to pass through the stoma in seventy patients, and in one of the remainder, the preoperative subjective symptoms had been entirely relieved and weight gained, although the gastric clearance was still slow. In a series of sixty-five cases, some barium was seen to pass through the pylorus in fifty-two, but in twenty of the fifty-two cases, pressure of the palpating hand was necessary to pass the barium through the pylorus. The proportion passing through the pylorus represented only a fraction of the total meal.

The stoma should lie at or near the lowest point of the stomach when the patient is in the erect position. When the stoma is too high, the stomach empties quickly until the level of the stoma is reached, after which the gastric evacuation is much too slow. In a series of cases in which the gastro-enterostomy opening was made exactly on the greater curvature, the average emptying time of the stomach was practically the same as in an equal number of cases in which the stoma was placed conveniently near the greater curvature but without any special effort to put it exactly on the greater curvature.

Béclère[17] believes that the stoma should be located at the lowest point of the stomach very near the pylorus. The contours of the operative zone should be somewhat retracted, but they should be regular. The evacuation occurs by jets, the total duration of the passage of a bolus, or jet, being about thirty seconds, an interval of about three minutes occurring between jets. His paper is accompanied by roentgenograms illustrating the passage of one of these jets. His observations agree entirely with the work of Cannon and Blake and with the observations that I published ten years ago.

Hartmann and his followers urge the necessity of placing the stoma as near the pylorus as possible.

Goetze sutured small metal beads on the inside of the stomach at the upper and lower end of the anastomosis so that they remained visible for weeks. He was thus able to observe that the anastomosis usually lies higher than was intended even when the surgeon thinks he has made it at the lowest point. He assumes that, in drawing the posterior wall of the stomach forward out of the slit in the mesocolon, the pyloric part frequently remains fixed on account of posterior perigastritis, while the higher part of the body which lies more to the left follows without resistance. If the anastomosis really lies at the lowest point, there is rapid precipitate emptying, and a tendency of the stomach to grow smaller secondarily. When the pylorus has been occluded at operation by any means other than complete division and suture of the stomach, it usually reopens within a few months, sometimes within a few weeks. But even with the pylorus permeable, the great bulk of the barium meal finds its way through the stoma.

Some have declared that the stomach after operation becomes notably smaller than before operation. This is doubtful. In the postoperative examination, evacuation usually begins to occur before the stomach is filled, and this gives the impression of diminished size. Furthermore, since the duodenojejunal angle is more or less fixed, the lower border of the stomach may be held in a higher position than usual when a very short loop of jejunum is employed for the anastomosis, and this adds to the false impression of diminished size of the stomach because the lower border is held at a higher level.

Peristalsis is distinctly less marked than in the non-operated stomach. Sometimes it is plainly seen in patients who are symptomless. There is no disturbing dilatation of the jejunum below the stoma, and if the gastro-enterostomy is functioning normally, the duodenum is not dilated. Study of the stoma may sometimes reveal adhesions, but its appearance is symmetrical, rarely deformed. There is usually a slight retention of barium in the jejunum just opposite the stoma. This may have to do with the comparative frequency of gastrojejunal ulcer following gastrojejunostomy.

For many years, gastro-enterostomy was looked on as a drainage operation; but Cannon's classic studies on the movement of food after gastro-enterostomy indicate that a purposive control of the new opening is sooner or later established. Goetze holds that fundamental principles in gastric surgery demand that the postoperative form and function will correspond as nearly as possible to those of the normal stomach. In 1915, I declared my belief that in normally functioning cases the passage of material from the stomach occurs very much as in the normal patient who has not been operated on. With the barium-water mixture, the very first swallow of opaque material usually finds its way at once into the jejunum; then there is a certain brief delay after which the passage of food boluses is irregularly intermittent, and the total time required for the clearance of the barium meal averages from three to four and one-half or five hours, depending somewhat on the nature and quantity of the opaque meal.

The average emptying time in sixty gastro-enterostomies that clinically gave perfectly satisfactory results was three hours and forty minutes, a barium meal consisting of 4 ounces (120 c.c.) of barium-water mixture followed by 10 ounces (295 c.c.) of a mixture of barium suspended in buttermilk or warm malted milk being employed. The average emptying time of fifteen perfectly satisfactory cases examined within three weeks of the day of gastro-enterostomy was four hours and twelve minutes. The average emptying time of another series of fifteen satisfactory cases in which operation had been performed more than three years before the postoperative roentgen-ray test was four hours and eight minutes.

Cannon and Blake found that when pyloroplasty had been performed, rapid exit of food from the stomach was prevented by the formation of a rhythmically contracting constriction ring in the duodenum. They believed that this activity replaced in part the function of the pylorus. I have observed evidence of this phenomenon in about one half of the cases in which a Finney or other pyloroplastic sphincter-destroying operation has been done. It is interesting to note that an analogous phenomenon was seen in a fair percentage of cases in which the ordinary gastrojejunostomy has been performed. It is my impression that the surgeon need not fear making the gastro-enterostomy opening too large; the danger is that the opening may prove too small. After all, within reasonable bounds, the size of the gastro-enterostomy opening depends on the caliber of the jejunum below the opening and not on the diameter of the opening itself. Hence, it is better that any error on the part of the surgeon should be in the direction of a larger rather than a smaller opening. In a number of patients clinically well and entirely satisfied with their operation, in whom ordinary gastrojejunostomy has been performed, it has seemed to me clear that a sort of sphincter action is established in the jejunum below the stoma. This was at first interpreted as a spastic contraction of the circular muscle of the jejunum, but in the light of Cannon's studies and many years of personal observation of these cases in the fluoroscopic room, it seems reasonable to conclude that this contraction ring in the jejunum is purposive, serving somewhat as a sphincter. Kocher, many years ago, stated that the gastro-enterostomy developed a sphincter action and actually underwent rhythmic contractions. Later writers have felt that these contractions were due to temporary alterations in the form or angle of the stoma incident to the passage of peristaltic waves in the stomach.

There is no longer any question of an autonomous sphincter capable of coordination. It never completely suffices for active powerful closure even when most favorably situated in the antrum whose stronger musculature, as mentioned by Hartmann, produces an intragastric pressure from four to eight times greater than that obtaining in the body of the stomach. Under pathologic conditions, on the other hand, the new stoma may contract completely and produce total occlu-

sion, if its lumen was not too large in the beginning. But in the latter case, the resistance offered is no longer furnished by the anastomotic ring but by the cross section of the spastically contracted jejunum.

These observations regarding establishment of a sphincteric control at the stoma are strengthened by roentgen-ray studies on patients operated on many years ago. A man in whom, twenty-three years ago, posterior gastro-enterostomy for cicatricial pyloric obstruction was performed, with the use of a button for intestinal anastomosis, recently offered himself for examination although he considered himself in perfect health. At present, the roentgen-ray study shows the stomach, when filled, to be normal in size and shape. In the erect position, the stoma was located vertically below the cardiac orifice. Peristaltic waves were seen on the lesser curvature, commencing in the usual position and passing through to the pylorus. No peristaltic waves were seen on the greater curvature above the stoma, but were slightly in evidence between the stoma and the pylorus. A minute or two elapsed before opaque material began to leave the stomach. Some barium was seen to go through the pylorus, and on manipulation the duodenal bulb filled fairly well. Approximately two-thirds of the material passed through the stoma. There was no dilatation or reverse peristalsis in the duodenum. The stomach required nearly five hours for emptying our standard opaque meal.

De Luna [21] also reported a case in which, twenty-three years before, anterior gastro-enterostomy was performed. The patient had had no gastric or intestinal trouble at any time since. He still complained of the necessity of not eating too much at a time, and on rare occasions, vomited small quantities of bile. Roentgenologic study showed the gastric wall supple, the stoma, situated at the lowest point, functioning in a regular and rhythmic manner. The boluses of food in the upper intestinal loop were distinctly held there a certain length of time.

Christophe [16] has recently reported on the final results in some cases of Hartmann.[5] This surgeon is an advocate of placing the stoma as near as possible to the pylorus with the idea of utilizing the pressure of evacuation of the pyloric antrum, which is from four to eight times greater than in the vertical portion of the stomach. In the cases reported, operation was performed from four to eighteen years ago. He found that the barium hardly reaches the stomach before it begins to leave by the new opening. There is in some instances a situation in which the atonic stomach empties through a wide open orifice through which the barium runs passively. In many cases, but not in all, the rush of barium through the stoma stopped when stomach contractions began, gastric clearance then proceeding by ejaculations more or less rhythmic. It is more logical to admit that the strong contractions of the musculature of the stomach can in certain cases periodically close the opening. Härtel also takes this view. In fact, it seems that the gastric ejaculation precedes by a little the passage of the peristaltic wave.

One can understand easily enough how a complete relaxation of the empty stomach leaves the stoma wide open. The first swallow of barium is gobbled up, and in some instances of marked atonicity (the so-called dumping stomach), the barium continues to rush out through the new opening; but as soon as gastric tonus is resumed and there reappear moderate tonic contractions of the muscular fibers, the borders of the mouth are hugged together. It is quite possible and probable that there is a definite relation between the direction of section of the muscular fibers and the permeability of the stoma. The more or less obliquity of the incision in the stomach wall may explain the apparent differences in size of the anastomotic mouth at the moment of passage of a food bolus. There are, it must be admitted, a certain number of cases in which periodicity of evacuation is not observed and the stoma is open all the time.

Normal cases do not show a deformity of the gastric outline due to the operation of gastro-enterostomy, nor is the gastric mobility seriously modified by the operation. There do not exist incisures or spasms due to the anastomosis.

Summarizing, then, the gastro-enterostomized stomach that is functioning satisfactorily, the patient being symptom free, exhibits the following characteristics: (*a*) normal form of stomach; (*b*) no deformities, serrations, incisures or filling defects due to the operation; (*c*) emptying time exceedingly variable, from one to five hours, more often from three to five hours; (*d*) unless the pylorus has been closed by stenosis or by operation, passage through the pylorus of at least some of the barium; (*e*) passage through the stoma usually by jets more or less rhythmically. Gastro-enterostomy, then, is not by any means simply a drainage operation.

GASTROJEJUNAL ULCER AND GASTROCOLIC FISTULA

The most important pathologic finding in gastro-enterostomized stomachs is gastrojejunal ulcer and its occasional sequel, gastrojejuno-colic fistula.

The one direct sign of a gastrojejunal ulcer is the evidence of an ulcer crater in relation to the stoma. One is able to see this only very rarely. More often there is a deformity about the stoma, narrowing and irregularity of the jejunum, and evidence of fixation at the site of the anastomosis, all of which are in contrast to the lack of deformity and perfect pliability of the jejunal walls and mobility of the stomach at the site of the anastomosis found in normal cases. Indirectly, dilatation of the stomach and duodenum, delay in gastric clearance, and unusual activity of the gastric musculature, manifested either by spasm or by hyperperistalsis, suggest the presence of an anastomotic ulcer. There is a characteristic general excitation of the stomach and upper bowel recognizable by the experienced roentgenologist. Motor irritation may be suggested by: (*a*) extreme, boardlike contractions of the stomach; (*b*) serration of the greater curvature; (*c*) spasm of the new stomach outlet sometimes amounting to a total long continued occlusion of the anastomosis, and (*d*) spastic contractions of the adjacent jejunum, recognizable by the fact that the first bolus of barium that passes is followed immediately by an occlusion that is spastic in nature and may or may not result in a prolonged gastric clearance. In other cases, there is often no disturbance in gastric mobility. The coincidence of a point of pain on pressure with the gastro-enterostomy opening is highly suggestive. When, in addition to other suspicious symptoms, there is pain at the site of the anastomosis that can be localized only by roentgen-ray examination, operation is indicated on account of the suspicion of jejunal ulcer.

Gastrojejuno-colic fistula is a relatively rare complication. There are clinically three principal symptoms: (1) diarrheal stools containing food ingested shortly before the bowel evacuation; (2) vomiting,

21. De Luna, C.: Arch. d. mal. de l'app. digestif. **12**: 981, 1923.

frequently containing traces of fecal matter, and sometimes accompanied by eructations of fecal odor; (3) rapid cachexia accompanied by the preceding signs. Here roentgenologic study renders great service in proving the gastrocolic communication, either by employing the opaque meal or the enema, or by insufflation, repeated as often as is necessary to observe the following signs:

1. The passage of opaque material into the left colon immediately after ingestion of the meal, the right colon usually remaining empty.
2. The possibility of causing opaque material from the stomach to pass into the colon, and vice versa, by manual palpation under the fluoroscopic screen.
3. The presence of opaque material in the stomach after the barium enema.

The screen examination should also help us to differentiate between the two greatest causes of gastrocolic fistula—cancer and ulcer of the stomach. Of those methods of study, the enema is the more conclusive, for if the contrasting medium is given by mouth a possible bolus passing into the colon may be disturbed or hidden by filling of the small intestine at the same time.

It is apparent from our postoperative studies that gastrojejunal ulcer occurs more frequently following simple gastro-enterostomy, and especially anterior gastro-enterostomy, than after partial gastrectomies involving resection of the ulcer-bearing zone of the stomach.

RESULTS AFTER GASTRIC RESECTIONS

The immediate postoperative results in all forms of gastro-intestinal anastomosis following partial gastrectomy have been good. In no instance have we failed to find the barium passing readily into the small intestine. Here, in contrast to the case with gastro-enterostomy, the emptying time of the stomach is usually very much reduced, depending somewhat on the proportion of the gastric wall removed at the operation. Of the patients that have come to us years afterward for postoperative study, we have made observations on those subjected to a Polya operation, either postcolic or antecolic, and those who have had a Billroth operation after the first or second method. The patient who returns with severe symptoms after a stomach operation, excluding those who have been operated on for carcinoma, is not the one for whom resection has been performed but much more frequently the one who has had a gastro-enterostomy. I have records of a number of patients perfectly satisfied and clinically well who were subjected to partial gastrectomy several years ago. In a small series of patients operated on by the Polya method for antral ulcers from five to ten years ago, the cardiac end of the stomach was found to be normal, peristaltic waves shallow, and barium starting freely into the small intestine. There was no evidence of dilatation in the upper loops of the small bowel and no irregularities of the stomach around the pyloric end. In spite of the apparent ease with which the material passed into the jejunum, the average emptying time of the stomach was four and one-half hours.

Following a Billroth I operation, there is often precipitate emptying of the stomach. Generally they are steeply oblique, wedge-shaped stomachs with an emptying time of from fifteen minutes to one hour; but longer delays are seen, and it is in these that one observes slight peristaltic waves. This precipitate emptying is sometimes slowed by a narrowness of the anastomotic opening, which is just at the limit of what is permissible.

Billroth II stomachs show rather long shadows hanging well to the left of the spinal column. When the outlet is at the deepest point of the remaining stomach, there is a great tendency to precipitate emptying. There was no noteworthy peristalsis in the cases studied.

ANNULAR RESECTION

After annular resection, there is observed a diminutive stomach usually situated to the left of the spinal column. The pylorus lies in front of or even to the left of the vertebral bodies. That portion of the stomach shadow below the annular suture line is shrunken to the point of being almost nonexistent. The duodenal bulb and the first portion of the duodenum are strongly drawn to the left. In the cases of this type, there has been a midgastric constriction, somewhat serrated, situated on the old line of suture. This constriction is marked by an incisure, deeper on the greater curvature than on the lesser. This deformity is organic and persists in spite of antispasmodics. It is seen from the time the barium enters the stomach and is exaggerated at the moment of the passage of peristaltic waves, the exaggeration being more marked on the greater than on the lesser curvature. There is often a dilatation of the upper sac of the stomach visible on its greater curvature—apparently an excess of gastric wall on the greater curvature of the superior segment. The emptying time of the stomach after annular resection is from three to five hours. The barium collects in the upper segment, but passes so quickly through the lower half that it is difficult to study its walls. The peristaltic waves are shallow but have been seen starting above the field of operation and proceeding to the pylorus on both curvatures.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. KARSNER, CARMAN, BARKER AND CASE

DR. LEWIS G. COLE, New York: Concerning the relative incidence of prepyloric and postpyloric ulcers, it will be more firmly established by roentgen rays than by surgery and necropsies, especially as in roentgen-ray examination the sphincter forms the landmark from which to survey all this region of the bowel. Constitutional and conditional factors concerning the causes and mode of development of peptic ulcers include habitus, diathesis, anomaly, endocrine disharmony, periodicity, acidity, infection, strain, physical and psychic, and others with selective affinities for special tissues. The great number makes it difficult to select the responsible one. Bloating, burning, gas, eructations and constipation, flatulence, are all indications of rumblings in the gastrointestinal tract. Patients may have hunger without pain, or pain without hunger. There is no history that is typical of either gastric or duodenal ulcer. The statement that "the necessity of caution in evaluation of the anamnesis is therefore obvious" is rhetorically elegant but only mildly emphatic when one considers the facts concerning the value of symptoms. General physical examination is helpful in ruling out certain conditions that simulate ulcers, but the findings are unreliable. We are all very grateful to Dr. Barker for his remarks concerning the misleading reports of inexpert roentgen-ray observers, and we should seek to help our fellow roentgenologists. I wonder whether the percentage of inaccurate diagnoses on gastric ulcers is greater from the source of the inexpert roentgenologist than it is from the inexpert clinician, when the latter's evidence is based entirely on evidence which he does not take from the roentgenologist. I wonder whether the inexperienced roentgenologist would not

hit a higher average than even the expert clinician. Dr. Barker says that general practitioners and internists see ulcers in their earliest stages. When, where, and how do they see them? When did they see the last ulcer in its early stage without roentgenogram or without the surgeon's help? No doubt ulcers are readily divided into two groups—surgical and medical; and perhaps from a clinical standpoint all uncomplicated ulcers should first be treated medically. Dr. Barker's conservative, rational and well balanced common sense diet with early ambulatory treatment seems to me the sheet anchor for medical therapy. By a complete and thorough roentgen-ray examination, preferably serial roentgenology, repeated as often as necessary, one can determine the incidence of prepyloric and postpyloric ulcer; he may derive much help in undestanding etiology, and very definite data concerning the pathogenesis, progress or retrogression of the ulcer.

DR. J. SHELTON HORSLEY, Richmond, Va.: As Dr. Barker said, surgeons and internists are getting closer together, and, from the standpoint of a surgeon, I most heartily endorse the general principles of the treatment of peptic ulcer that he has laid down. The patient always needs medical treatment, at least medical postoperative treatment, in those cases in which operation is done, and undoubtedly many early peptic ulcers are cured by medical treatment alone. The question of the proper technic is vital. Many of the patients treated by a gastro-enterostomy do poorly, as Dr. Case has said. One reason why we do not get more satisfactory statistics is that the gastro-enterostomized stomach is treated as an entity, and the occasion for the gastro-enterostomy is often not considered. It might be done for inoperable cancer, or for a small duodenal ulcer that does not produce any marked spasm. Between these extremes there lie the infiltrating ulcer, the ulcer, the adhesions and stenosis. We should not attempt to twist any one operation to make it fit all the various pathologic gastric conditions. There seems, too, to be a tendency toward very radical surgery in all these ulcers, and that is a swing of the pendulum in the other direction. If a gastro-enterostomy as a routine operation does not cure, then what may we do? Not study the cases carefully from the standpoint of physiology and pathology, but just cut the stomach out and have it over and done with. That seems to me an unscientific attitude if it is taken as a routine measure. There are, of course, other surgical measures, such as pyloroplasty, which have a very definite field. Carlson, in reviewing gastric secretion in *Physiological Reviews*, January, 1923, says that there is no such thing as gastric hyperacidity and that normally there may be 0.5 per cent. of hydrochloric acid. He thinks that gastric juice has been too much glorified. Great variations in gastric juice may occur without materially affecting the health. The specific hormone gastrin, which Edkins is supposed to have discovered about twenty years ago, is now discredited by Carlson and others. But there is something in food that excites a secretion of gastric juice. It is not solely mechanical because sand, while causing a mucous secretion, does not produce gastric juice. A spasm that causes obstruction makes the food stay in contact with the stomach longer than normally. Hyperperistalsis overcomes the obstruction for a while, but after the hyperperistalsis has exhausted itself still some food is retained, and the presence of this food excites an excessive amount of gastric juice. What would you do if there was an ulcer in the rectum just above the sphincter which caused a spastic contraction and pain and dammed back fecal contents? You would give physiologic rest by stretching or dividing the sphincter, and cauterize or excise the ulcer. So we can in many cases divide the sphincter and the pyloric canal by an incision, excise the ulcer and relieve the spasm. Of course, all foci of infection should be removed. Where there is recurrence of an ulcer after pyloroplasty or when the ulcer is gastric and even moderately extensive, a partial gastrectomy should be done. But I think that if I had a small duodenal ulcer I would rather have a milder operation with a restoration of normal physiologic conditions and take a slight chance on a more radical operation later on, than to have the radical gastrectomy done at first.

DR. W. H. STEWART, New York: I should like to issue a word of warning as to depending on bismuth in water or even in buttermilk as indicating the time of emptying after gastro-enterostomy. I have had one or two cases in which the patient manifested symptoms of a reclosure of the stoma, and with the ordinary bismuth in water or bismuth in buttermilk, the time of emptying was about three and a half hours, which we considered practically normal. Still, the symptoms continued. The surgeon found that the stoma had contracted down to a very marked extent and reproduced some of the old symptoms. From that time on we have made our tests with meal. As Dr. Vici said some years ago, when surgery came in all bets were off, and I do not know of anything that it applies to so well as it does to the gastro-enterostomy stoma, and I do not believe that anybody can recognize ulceration, a marginal ulcer in much more than 10 or 15 per cent. I hope I do not misunderstand Dr. Case when he said that in normal gastro-enterostomies there was a normal contour. I have examined many gastro-enterostomies and found that the surgical procedure almost always produces a deformity. It produces a puckering, a deformity that is very difficult to differentiate from the ulceration. Another point one has to bear in mind in estimating the emptying time of a gastro-enterostomy is that when the surgeon operates, the patient is lying on his back. When the patient is placed in an erect position, there is a valvelike action from the stomach falling forward, and there is a kinking of the jejunum in such a way that a marked obstruction is produced. I have seen at least three cases of that character in which by holding the stomach up the stoma was relieved of its obstruction.

DR. I. O. PALEFSKI, New York: I listened to the several papers of this symposium with a great deal of interest, particularly to the paper by Dr. Barker. He presented his subject from a general but practical point of view. What pleased me particularly is his emphasis on the importance of the after-care following the initial medical treatment of ulcer; for it should never be forgotten that the results of any of the procedures in vogue depend on the subsequent enforcement of dietetic restrictions for at least two or three years or even longer. As to the relative merits between the clinical and roentgen-ray findings I cannot agree with Dr. Cole who, in his discussion, attempts to put a damper on the value of clinical examinations. Those, like myself, who employ both clinical and roentgen-ray examinations in almost every case presenting for diagnosis, know from experience that both types of examinations are necessary for a correct diagnosis in the average patient. It is not uncommon to find instances in which the roentgen-ray findings mislead the diagnosis. In duodenal ulcer as well as in diseases of the gallbladder, the clinical findings are indispensable, while in gastric conditions the roentgen-ray findings are more important. It is impossible to accept the results of several roentgenologists as a standard. Of late, a large number of men of limited experience entered this field, and it is here that roentgenology suffers considerably.

DR. SEALE HARRIS, Birmingham, Ala.: As to the pathogenesis of ulcer, we hear a great deal about the focal infections, and unquestionably they play a very important part; but the recent work of expert observers seems to show that there is something far back of that which lowers resistance of the gastro-intestinal tract, the stomach and duodenum to infection, and those men think that our present diet of white bread, white rice and white sugar, a very excessive carbohydrate diet, has something to do with lowering resistance to these bacterial organisms, for they can find a place in which to thrive. As to the anamnesis in ulcer and to the early diagnosis of ulcer: The Mayo statistics show that ulcers had existed in their patients over a period of about nine years before they came to the Mayo Clinic. Dr. Finney's and Dr. Friedenwald's statistics show that theirs existed about ten years. A study of our patients that came to us for medical treatment showed that they existed about five years, and unquestionably the ulcer should be regarded as a very chronic condition. If we will study our cases, we shall find that long before the patient had the pain, there was nausea, vomiting, vague gastric disturbances of a periodic character.

One thing in the history of ulcers should be considered, and that is the patients who complained of indigestion and vague discomfort of various kinds that came on two and three and four times a year, passing off only to recur again. Periodicity is the important thing in ulcers. As to diet, it is thoroughly unscientific to attempt to make an ulcer diet fit every patient. We should make the condition of the patient, his age, his size, weight and all those things have their proper consideration, as well as the nutritional needs of the patient in making out the ulcer patient's diet, and I am convinced that instead of the high protein diet that most of these routine ulcer diets contain, averaging from 120 to 150 gm. of protein a day, which these patients are given and taught to live on for the rest of their lives, a protein diet of about 60 or 75 gm. is enough for the body to eat, the relatively high fat diet and low carbohydrate diet, and a diet that is righ in vitamins that may be given with the idea of building up resistance to these infections.

DR. A. E. BARCLAY, Manchester, England: One point Dr. Carman did not bring out as to the radiographic and actual size of the ulcer. The large craters that we see radiographically are not necessarily the same size as those which the surgeon removes. The ulcer is usually much smaller than we expect. This is due, I believe, to the heaping up of the mucous membrane around the ulcer. My first lesson was an ulcer which I thought was probably about half an inch in diameter, and when the surgeon brought it down to me after operation, it was little more than an eighth of an inch in diameter. The site of the stoma may vary from time to time. On one occasion I told the surgeon that he had placed his stoma too high, and this he denied categorically. I then took it into my head to observe a number of these stomas from day to day, and found that the stoma can move more than an appreciable distance from the lowest point upward on the lesser curvature; i. e., one day the position appears to be good, while on another occasion it appears to be far too high. What the meaning of this is I do not know. Perhaps Dr. Case will tell me. Dr. Carman had some very nice pictures illustrating palpation, a subject on which we are in full agreement as to its value. He showed the heavy shadow of a gloved hand lying in the middle of the illuminated field. But I do not think Dr. Carman does palpate that way. I know I do not myself. The screen should be limited down to a very small field, and the palpating hand should never be within the illuminated area, for there is more than an inch of margin between the edge of the illuminated area and the organ that is being palpated.

DR. LEWELLYS F. BARKER, Baltimore: The stress laid on predisposition by both Dr. Karsner and Dr. Harris deserves attention. In this connection, the recent reports of the existence of areas of capillary inferiority would seem to be of especial interest and it is just possible that a vascular inferiority in some of these ulcer patients may be the basis of predisposition. What has been said by Drs. Carman, Case and Cole has shown very clearly how important roentgenologic examinations are for the control of clinical work; they aid in diagnosis, and in following the cases after operation they are most useful for the determination of the success or the nonsuccess of the surgical intervention. Some reference was made to the number of mistakes made by clinicians in contrast with those made by roentgenologists. Of course, I had reference rather to mere technicians who are not expert roentgenologists. It is quite true, of course, that an inexpert clinician can make equally bad mistakes. The internist and the general practitioner of today, in his study of gastrointestinal disturbances, does not, however, limit his study to the anamnesis and the physical examination, but includes also roentgenologic reports. In other words, the clinician has become more or less protected from making mistakes because he wisely associates with him, in his studies, workers in special domains. Dr. Horsley has emphasized the fact that all cases should be treated medically and some of them should be treated surgically. I believe that that is true. The uncomplicated cases certainly deserve a fair trial of medical treatment before operation is resorted to. An operator will secure better results, too, if his patient has been given a preliminary period of medical therapy, and, certainly, after operation, the same precautions that characterize the medical therapy should be observed in all cases. Cures undoubtedly follow medical therapy and surgical therapy, but they are perhaps not quite so numerous as either the medical man or the surgeon is prone to think. We often see an abatement of symptoms or a disappearance of symptoms and a restitution of apparently normal function, but in many instances the ulcer remains unhealed. It is well known that even after operation for ulcer, especially after gastroenterostomy, the necessity of secondary laparotomy often arises. I have also been impressed with the difficulty patients experience in accommodating themselves to a gastroenterostomy. I have known many physicians who have gone through gastro-enterostomy operations; they have told me that it took them a long time "to adapt themselves" to the gastro-enterostomy. In case I had to undergo, myself, an operation for ulcer, the kind of operation I should want done would depend on two things: (1) the surgeon who was to perform it, and (2) the local conditions found at operation. If I could choose an expert surgeon, I should leave matters entirely to his judgment; but if I had (because of some emergency) to submit to operation by a surgeon of limited experience, I should want him to do as little as possible "to let me get by." An expert surgeon would, of course, choose the particular operation that he thought would not only relieve the immediate situation but also give me the best chances of permanent freedom from symptoms. Thus, when a severe chronic gastritis is present in association with ulcer, an extensive gastrectomy with removal of the diseased mucous membrane might often be preferable to a gastro-enterostomy.

DR. JAMES T. CASE, Battle Creek, Mich.: Dr. Stewart spoke about the proper type of meal to test the time it takes the stomach to empty. My feeling is that it matters not a great deal what type of meal one uses, provided the same kind is used year after year and it becomes a standard for him. It is not possible for different men to compare the emptying time of the stomach under different conditions, but one man can compare various cases of different types under the conditions under which he works. As for the variation in position of stoma suggested by Dr. Barclay, that is a very interesting suggestion to me and one that I shall study. It had not occurred to me before. I want to call attention to a paper by Dr. A. H. Pirie which appeared a couple of years ago regarding the value of postoperative roentgen-ray studies in aiding one to accommodate oneself to gastro-enterostomy. I refer to it in my paper but had not time to read it. One important question I did not bring up at all in my paper. What is the significance of a persisting deformity of the duodenum following an operation? We hear a good deal about the disappearance of ulcer roentgen-ray signs in the stomach as a proof that the medical treatment of gastric or duodenal ulcer has cured the ulcer, and there are appearing in the literature publications, including publications of roentgenograms, where these roentgenograms are being used to prove that the ulcer had been cured, because in the pretreatment roentgenogram there was a crater and in the later roentgenograms there was not a crater. What about the duodenum? We consider a persisting deformity of the duodenum as one of the characteristic signs of ulcer, but I find it very common also in the duodenum after operation, even years after operation when the patient has no symptoms at all of duodenal ulcer. Some of these on which I have reported are patients who live somewhere near me who have very kindly come in to submit to restudy just so that I could get some data. I do not know how to explain why in apparently cured cases the duodenal ulcer deformity persists long after operation. I hope some future writer will tell us that.

Plague Prevention.—Once plague infection is present in a given city or community, the fight against the disease resolves itself into a fight against the rat or other rodent concerned in its spread. In pneumonic outbreaks the human cases, of course, must be separated promptly from the noninfected portion of the population.—*Pub. Health Rep.* **40**:53 (Jan.) 1925.

MEAT INSPECTION AS A PUBLIC HEALTH MEASURE *

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The last decade has greatly enriched the science of nutrition, but two achievements stand out most prominently. They are the discovery of vitamins and the proof that not all proteins are of equal nutritive value; that some, particularly most vegetable proteins, are incomplete, while most animal proteins are complete in that they contain the components necessary for growth, repair and replacement. A number of diseases whose etiology was heretofore unknown have been definitely proved to be caused by lack of vitamins, and of late, considerable evidence has been brought forth to prove that resistance to disease, particularly infection, and even reproduction, may be dependent on vitamins and the quality of proteins, or both.

These facts have collectively been called "the newer knowledge of nutrition," and they prove that there is more to food than calories. The proper selection of foods both in quality and in quantity is not merely an individual problem but a public health question of great magnitude. The last decade also brought forth new ideas regarding the hygiene of food and the relation of food to disease. The older teachings that food per se can cause disease after it is assimilated has been largely if not entirely discarded. Many diseases, particularly the various forms of so-called rheumatism, were for a long time thought to be caused by foods and were therefore treated dietetically, but are now known to be caused by infection.

Food poisoning, looked on for a long time as due to intoxication with products of food cleavage, either bacterial or chemical, has now been proved to depend on contamination of food with bacteria and ingestion of specific toxins produced by the bacteria, as in botulism, or of the bacteria themselves, as in the paratyphoid group.

Just as the newer knowledge of the nutritive principles of food has made the selection of proper food a matter of public health concern, so have the newer conceptions of food intoxications or, as some refer to call them, food infections, added greater importance to food hygiene.

Mohler and Eichhorn, in their introduction to "Meat Hygiene," express themselves as follows:

> Regulation of the diet or hygiene has for its purpose the retaining and strengthening of the human or animal organism by increasing the internal resistance and by preventing any noxious effects. In doing this it is necessary in the first place to consider the nourishment of the organism. Inasmuch as meat constitutes the principal foodstuff for the human body, the regulation of the diet of man must also extend to meat products. And since recently there has been considerable attention paid to the latter from a hygienic standpoint, justification is had for the use of the words "meat hygiene," by which it is understood that part of the regimen which concerns the procurement of wholesome meat foods for man, their value to public health as well as the dangers which threaten the consumers of diseased or unsound meats.

The term "meat inspection" in this country practically always refers to inspection conducted by the federal Department of Agriculture under the meat inspection law passed by Congress in 1906. Under this act, the Secretary of Agriculture has the power to formulate regulations governing the antemortem and postmortem inspection of food animals; to prescribe sanitary requirements for the manufacture of meat products and proper and truthful branding and labeling. The law also gives the secretary the power to eliminate from the food supply all those carcasses and parts and meat products that are found in any way objectionable for human food and to destroy them.

It is to be remembered, however, that this law applies only to meats and meat products that enter into interstate or foreign commerce. It has no jurisdiction over meats that are sold and consumed in the state in which the animals are slaughtered. At present, something over 60 per cent. of the meats consumed in this country are manufactured in establishments operating under federal inspection. The remaining 40 per cent. of the meat receives little or no inspection because, while there are a number of state and municipal inspection laws, they are not thoroughly enforced. The fact that only one-half the meats consumed in this country receive adequate inspection can at once be seen to constitute an important problem of public health, but this will be referred to later.

It is not necessary here to go into the detail of the technic of meat inspection as conducted by the federal Department of Agriculture. It suffices to say that the technic is based on modern etiology and pathology of animal and human disease and the principles of sanitary science. All parts, organs and the important lymphatic glands are examined by palpation and incision. That it is thorough is at once proved by the fact that for the fiscal year ending June 30, 1924, of 79,966,913 animals given antemortem inspection, 4,228 were condemned, and of 79,814,060 given postmortem inspection, 342,539 animals were condemned and 1,355,394 parts were condemned. These condemnations were made because of thirty-five different causes, chief among which is tuberculosis, which was responsible for approximately one-half the condemnations. These condemned carcasses and parts were treated under the regulations in such a manner that none of the resulting products could under any circumstances be used for edible purposes. The removal of such enormous quantities of meats from the food supply of the country unquestionably constitutes a great sanitary achievement.

The elimination of undesirable and unwholesome food is only a part of the inspection. The conditions under which slaughter is conducted, and the manufacture of meat products, are as thoroughly under the supervision of the federal government and are as minutely controlled as is the postmortem examination. The equipment used, materials, etc., and even the clothing of the employees must comply with specifications of the regulations, and when at any time in the process of preparation or packing the animal or part becomes contaminated or in some way unwholesome, it is condemned.

The removal of objectionable meats either by antemortem or by postmortem inspection is not the only benefit public health obtains through meat inspection. There is another benefit, by some considered of equal importance to the actual withdrawal of objectionable meats. I stated before that tuberculosis causes approximately one half of all condemnations of carcasses and parts on account of disease; in other words, tuberculosis causes as much condemnation as the thirty-four other diseases combined. There is, perhaps, no better way of discovering the localities infected with

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

bovine tuberculosis than meat inspection. When tuberculosis is found during meat inspection, the origin of the animal can usually be traced and in that way either governmental or other agencies notify the producer so that measures can be taken to eradicate it. The discovery of tuberculosis in animals during postmortem examination has been a great stimulus to eradication work against bovine tuberculosis, chief among which is the antituberculosis work of the United States Department of Agriculture. The antituberculosis work is as important as, if not more important than, meat inspection itself.

Tuberculosis is a ubiquitous disease and we are, perhaps, exposed to it everywhere and at all times; but it is generally conceded that milk from tuberculous cattle is one of the most fertile sources of infection of human beings, particularly children. It is believed in some quarters that all tuberculosis is acquired from milk in childhood and later changed to the human form. Tuberculosis eradication as stimulated by meat inspection has been greatly instrumental in diminishing contamination of the milk supply with tuberculosis, first, by the discovery of the location of tuberculosis herds, and, secondly, by the education of cattle producers to the value of the tuberculin test. In fact, meat inspection by the discovery of tuberculosis in cattle has undoubtedly advanced the movement for pasteurization of milk. Ditewig, said, in 1915:

> That the meat inspection service is the most effective existing agency for collecting on a broad scale data absolutely necessary to the success of any extensive program for the eradication of certain diseases from the food herds of the country can readily be shown.

The elimination of tuberculosis from dairy herds is more important from the standpoint of preventing tuberculosis than the destruction of meat from tuberculous cattle because, while infection of milk is an acknowledged etiologic factor in the spread of tuberculosis, infection with meat is practically unknown because muscle meat is rarely, if ever, affected with tuberculosis.

I stated before that the meat inspection law exercised jurisdiction over those meats and meat products which are shipped out of the state and exported, and that it has no jurisdiction over meats of animals killed and consumed locally, and for that reason only approximately 60 per cent. of the meats consumed in this country are inspected. We saw how efficient the inspection is by the searching and elimination of a large number of carcasses and parts. It is reasonable to assume that the meats prepared in noninspected establishments come from animals affected with the same conditions, at least to the same degree as are animals that are at present inspected, and it follows then that 40 per cent. of the meat consumed in this country is more or less objectionable. The necessity of providing some means of inspecting this quantity of meats is therefore at once apparent. The installation of some form of inspection of the uninspected meats and the supervision of the conditions under which they are prepared is an important problem of public health today.

Meanwhile, it is paramount as a public health measure that the consumer be acquainted with meat inspection—its extent, function and sanitary benefit. A great deal is being accomplished today by scientific writers, by magazines, by the press, by public health organizations and health departments, state and municipal, in teaching the public the selection of a well balanced diet; but the public has not been equally well informed in the hygiene of food. The consumer ought to be told how to select food on the wholesomeness and purity of which he can confidently rely. In order to select meats that have been inspected and found sound and been prepared under sanitary conditions, all the consumer needs to do is to insist on meats that bear the stamp of the United States Department of Agriculture, reading "U. S. Inspected and Passed." This stamp shows that the meat comes from a sound and healthy animal and was found fit for human food, that it was prepared under sanitary conditions, and that nothing of an injurious nature was used. Furthermore, it signifies that the contents of the container are exactly as the label reads, no more nor less. In addition to the knowledge on the nutritional value and hygiene of food, the public ought to be informed on the safe methods of preparing and keeping food in the home. From the standpoint of preventing food intoxication or infection, it is just as important that the housewife be informed of the proper methods of preserving food, either for a short period by refrigeration or for a longer time by heat, as it is to know how to buy hygienically prepared food.

ABSTRACT OF DISCUSSION

DR. THOMAS CASTOR, Philadelphia: Dr. Lipman has very completely outlined the necessity of meat inspection as a public health measure and has shown the thoroughness of the federal inspection service, which covers 60 per cent. of the meat supply, so I would like to emphasize the necessity of inspecting the other 40 per cent. by calling attention to a common practice of sorting out unsound or diseased animals at the stock yards or country shipping points and slaughtering them locally where no inspector will see them to pass on their fitness for food. Most of the states in this country have no system of state inspection or have so inadequate a force that they can only look after the worst places and clean up or eliminate the pest holes. This also holds good with the ordinary city inspection; so in view of these conditions it appears that the only way ever to secure thoroughly satisfactory meat inspection is to supplement the federal service by establishing municipal or community slaughtering plants where all of the slaughtering would be conducted, excepting only that performed under federal supervision, as thus a satisfactory and efficient service could be performed by a reasonable sized force of inspectors, because it is doubtful whether the ordinary city can ever supply sufficient funds to maintain enough inspectors to supervise properly the slaughtering at the considerable number of small, widely separated killing plants that are usually found operating in most cities. Unfortunately, many cities and especially small towns pursue an opposite policy and prohibit all slaughtering within the corporate limits, thus depriving these plants of all the advantages of city water and sewerage systems and force the slaughtering houses into rural districts where they are beyond all jurisdiction of the local health officials, thus leaving the butchers to do about as they see fit both as to sanitation and as to the handling of diseased carcasses, whereas if they were required to remain within the town limits they could be forced to keep clean and to handle their products in a proper sanitary manner. When establishing a local meat inspection service, the federal regulations can be used as a guide so far as practicable, and a veterinary inspector having had federal experience should be secured if possible, as these men have gone through a thorough drilling in the inspection work and are, I believe, less likely to be influenced by personal or political pressure.

DR. GEORGE M. KOBER, Washington, D. C.: In view of the fact that the inspection now covers only about 60 per cent. and until inspection becomes more universal, it seems to me at least desirable to raise our voices in favor of cooking all meat products. The same principle applies to milk, so far

as pasteurization to a certain point is absolutely essential for the destruction of infectious germs. This much we can all do. In our present state of knowledge, nothing short of general pasteurization will confer immunity from milk-borne epidemics. Typhoid epidemics have been traced to consumption of even certified milk. I enunciated that principle fifteen years ago and I have had no reason to change my mind.

Dr. W. H. Lipman, Chicago: There are two important points to consider from the standpoint of the consumer. First, how to secure inspection on meats that are at present uninspected; second, how can the consumer tell that he is getting inspected meats? Dr. Castor referred to the "little purple stamp" that is placed on carcasses and passed by the government to show that the animal has been inspected and found fit for food. If the consumer will insist on meats that have this stamp, he can be sure that he is getting sound and wholesome food.

EPIDEMIC ENCEPHALITIS

A COMMON ETIOLOGIC FACTOR, AND ITS IMPORTANCE IN PREVENTION *

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Aside from the question of infection there are few suggestions regarding the cause of epidemic (lethargic) encephalitis. An overliability to contract the disease is shown by certain classes, such as males (though not in all statistics), pregnant women, physicians, persons of foreign birth, and especially recent sufferers from influenza. Typhus, measles, mumps, pneumonia and scarlatina have also been noted in the histories, as have parturition, sepsis and accidents or operations particularly about the head. There has also been some question whether poliomyelitis or herpes and epidemic encephalitis might not be closely related. The upshot of all this is that any exhausting infection or occurrence can evidently play a contributory rôle.

My purpose in this paper is to point out a coordinate and more constant factor. This is to the effect that the victims are recruited from those who at the time have become exhausted by prolonged or excessive tire and especially by lack of needed rest. The one common element is loss of sleep. In most instances there has been a burning of the candle at both ends (overtire and underrest).

Many agencies of allied character doubtless can cooperate, such as toxemias, drug habits, bad air, anxiety and shock. Depressed mental states are a common cause of insomnia, and naturally contribute, though insomnia and enforced loss of sleep are not identical. Sexual excesses can do the same. This factor is of practical importance whether epidemic encephalitis is caused by a specific virus or not.

Some years since, a report from the Northwest noted that physical depletion, and especially loss of sleep, were frequent antecedents. Bassoe made similar observations. English reports figure overwork and a possible breakdown of immunity as predisposing causes.

Instances of like purport can be picked up in various publications. In general, however, it may be said that the antecedent history in these cases has received slight attention. While, therefore, there may be little radically new in these observations, scant account has been taken of the like, nor has their significance been duly appraised.

The matter attracted my notice more from an old habit of giving special attention to the amount of sleep usually secured—a field in which few attempt to gather exact information.

As only cases in which the diagnosis was clear are included, details need not burden the paper, beyond the statement of the factor in question.

In the early days of the outbreak this side of the subject was less scrutinized. Later cases, however, in sufficient number can now be listed to have significance.

The great problem is to work out the relevant items. Difficulty in so doing is doubtless the reason why the matter has not been better recognized. As yet, and until methods can be systematized, it is a time-consuming process, requiring the personal attention of the physician. Useful tips on obscure and nocturnal habits of the human can sometimes be obtained from social experts. In some cases the job is easy if attention is given the matter, but in many instances to secure the needed information it is necessary to make a determined "drive" backed by confident assurance that the facts exist. As the particulars in question are rarely twice alike the skill of a detective can find full play. Cases that have existed a long time are impossible to work out, or yield only to elaborate delving. General statements cannot be accepted, as these patients are always sure they have had plenty of sleep. Such night-habitués are often very secretive. At any rate, the items desired refer to lines of conduct about which the patient is not proud, or not in condition to state. Knowledge of the patient's life for a period before the onset may have to be extracted by bits, and then pieced together, before the clue is apparent.

To quiz or cajole, josh or jolly, may not succeed or need to be continued until some one gives the facts. The presence of strangers or of an entourage does not facilitate disclosures.

In most institutional and chronic cases, therefore, it is impracticable to get the required data. I long since gave up trying to do so as a routine in hospital work, and had to wait for enough patients in private practice. This report is based on twenty-eight such cases, including two in physicians. Several are given in brief to illustrate types and in part show the trouble encountered in eliciting this phase in the histories.

Case 1.—A chauffeur, aged 18, seen in February, 1923, though his case was acute and he was confined to the bed, was able to deny strenuously all excesses and deprivations. Both parents also positively confirmed his story of orderly living. But on the side, an uncle stated that the patient had catered to a fast crowd of youths, carried them to all hours of the night, caroused with them, frequented night joints, and been out until 3 and 4 a. m. six nights a week on an average.

Case 2.—A man, aged 55, seen in June, 1924, was troubled first about the middle of February. "He seemed to get run down a while before this came"; in fact, he had been tired out and "nervous" all the previous winter. No cause for this condition or for his attack could be discovered by the most diligent inquiry of the patient or his wife. He was "a home body," was never out evenings, had no worries, and lived an ideal existence, aside from one or two hours a day in the subway. It seemed impossible to dent the story of perfect living at any point, or to disclose any changed conditions. Here was apparently a case that must remain unsolved. The only other morbidity was a chronic systolic bruit at the mitral valve. However, conversation later with a son disclosed the

* Read before the Section on Nervous and Mental Diseases at the Seventy-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., May, 1925.

fact of a new radio the previous October, and the patient's heedless absorption in it. "He sat up all hours of the night" with it the whole winter.

CASE 3.—An electrician, aged 31, seen in January, 1925, first gave the duration of his trouble as one and a half years. From much questioning, however, it appeared that he was in a distant hospital with it for more than six months in 1922-1923. Further inquiry disclosed an acute attack in January, 1920, from which he remained weak, "extremely nervous" and sleepy. It was finally traced further back. He had been in the American Expeditionary Forces more than two years, in part at the front. The winter of 1918-1919 in Paris he had on his own showing only from six to six and a half hours' rest a night. Then in the spring he had an attack of the influenza, with a week in bed, followed by a chronic state of excessive sleepiness. Whether the influenza or not, it was evidently the onset of the encephalitis.

CASE 4.—A Russian, aged 51, of large frame, a job painter and decorator, had had left sacro-iliac trouble three years before and was relieved by Dr. Rushmore, the orthopedist, by whom he was referred to us. The onset was somewhat insidious. He had had pain in the left foot at times during the past year, and an occasional "shake" in that foot when on a ladder, with two acute upsets. The lethargic sequel was more pronounced the six weeks before examination. All shortcomings were persistently denied. No clue was discoverable, beyond pyorrhea. However, by the next morning he was so anxious to get home to a town in Jersey, that a little emphasis brought out the story. He was known locally as "the hardest worker in the country." During the active major part of the year he retired at from 10:30 to 11, and rose at 5. He worked from 6 a. m. to 7:30 p. m., less a brief stop for lunch. Minor taxes on his rest period were: a radio every evening, an automobile ride with his family many evenings, movies once a month, as fireman out two nights a month, nocturia every two or three nights and snoring regularly. Hence, besides being an inordinately hard worker for thirteen hours a day, he allowed only from six to six and a half hours a night for rest.

CASE 5.—A boy, aged 18, seen in February, 1923, with acute trouble of twelve days' duration, lived in Brooklyn, but attended college in Manhattan. He was a bright student, necessitating work on his studies until after midnight. He rose at 6:45 to get a snatched breakfast and be at his class in time. This reduced his sleep allowance to at most six and a half hours a night. There was the further evil element of two hours daily spent in the wretched air of the subway at the time when it was crowded. Besides these things he had just been through the midwinter examinations, evidently the last straw.

CASE 6.—A broker, aged 26, was in coma when first seen in January, 1921. He was a man of large mold, but with an old aortic regurgitation. The trouble began the month before. He had been "overworked for some time." He lived out of town, requiring an hour each way in transit. He regularly remained until late in town sporting. He had only four or five hours of sleep nightly for the previous two or three months.

CASE 7.—Mrs. D., aged 25, seen last December, had a subacute attack beginning a month before. She had been a public school teacher for some years. She had been married six months. Previously she had had no household duties. She now cared for her apartment, and got some meals, besides continuing her teaching at a distance. Moreover, most of the evenings she had been out, socially, not getting home before midnight. She rose by 6:45 a. m. Though of excellent physique, her strength had been waning for some time under this load of work and shortness of rest (barely six and a half hours a night). Then came the acute symptoms.

CASE 8.—A youth, aged 17, seen in January, 1921, was of good physique, but growing fast. The attack began a week before. Besides regular day work he attended a business school twice a week, not reaching home till 10:30 p. m. One other night a week he was at the regiment until after midnight. One night a week he bowled until after midnight. Two nights a week he stayed late with his girl. This left at most only one free night a week. It was far too strenuous a life for a youth who had not completed his growth.

CASE 9.—A man, aged 26, of Italian stock, seen in February, 1925, was a twin of sturdy physique. He was unmarried, and never had been a sexualist. Previous to epidemic encephalitis six years before, he had been a clerk. He rose at 6 a. m. and reached home at 8, 9 or 10 at night, with supper after. Saturdays he worked until midnight or 1 a. m. and also Sunday morning. He went to the movies once a week after his work. Twice a week he stayed at a friend's home until 10:30. He went to a dance one or two nights a week. He had a phonograph going when home. Then half the nights he read in bed until 2 a. m. Even at that he slept poorly, thus losing some of the remaining time. Hence, besides working twelve hours a day, he netted on an average less than five and a half hours sleep a night.

CASE 10.—A man, aged 21, seen in April, 1925, a sales manager, had epidemic encephalitis in the summer of 1921. He felt "sort of weakening spasms" in his legs prior to that, and every stride he made was an effort." The sequels were worse since recent illness in the family. Previous to the onset he rose at 8, was at business by 9, and not home until midnight, and Saturdays not until 1:30 a. m. He always ate supper after getting home. He then read one or two hours. He also spent two hours a day in the subway. There were a few other minor interferences with sleep. Hence, besides long hours of work, and time in the crowded subway, he had an average of barely six hours a day for sleep.

CASE 11.—A vigorous man, aged 23, seen in April, 1924, had his first attack four years before. He "stayed out with the boys" at least one night a week. Then a couple of days before the onset, he was up for forty-four hours at a stretch, working at urgent business plans.

A close counterpart of this case is Case 3 of Houda,[1] in which a man, aged 30, "had worked for forty-eight hours without stop, just previous to onset."

These two cases are so nearly identical and so special in type as almost to constitute experimental proof of the part that lack of sleep plays in this trouble.

CASE 12.—A man, aged 38, seen in April, 1923, had worked very hard as a tailor up to an acute attack a year before, sewing regularly from 4 a. m. until midnight.

CASE 13.—A man, aged 26, seen in 1923, had risen at 4:30 a. m. and worked until 5:30 p. m. for six weeks before the onset of his trouble. At that time he slept only six hours a day.

CASE 14.—A bank clerk, aged 25, had had epidemic encephalitis three years before. He had long been an erotic. He smoked twenty-five cigarets a day. One hour daily was spent in the subway. He rose at 7 a. m. and was at business until 7 or 8 p. m. Then seven nights a week he spent at the chess club until midnight. After that, two or three nights a week, he went to a restaurant. At best he was not in bed until 12:30. He was slow getting asleep, and was a dreamer. Hence, he averaged less than six and a half hours' rest a night.

FREQUENCY AMONG PHYSICIANS

That physicians have a special liability to epidemic encephalitis has been remarked by various observers. This has also been apparent in Brooklyn. I. S. Wechsler, in 1921, found it "almost sixteen times as frequent as among average population."

At the present day we do not to any like extent see physicians affected by the diseases with which they have to deal, unless occasionally in laboratory work. There is consequently a natural inclination to attribute this to infection from cases seen in practice; but before doing so it is well to see whether the facts substantiate the suspicion. Several of my medical friends have been killed by automobiles—also an undue proportion—yet no one thinks of this as a bacterial infection.

1. Houda, E. O.: Northwest Med. **20**: 182 (July) 1921.

If we presume that medical men contract the disease from their brief association with such patients, then the families of such affected colleagues, exposed to it at all stages as they are, ought in turn to be scourged. Yet practically it never spreads to any member of their households. Nor would a single case signify much, in view of the added care. We can therefore be sure that the frequency of this trouble among physicians is due to some other cause; and close scrutiny of the individual case commonly discloses the reason for susceptibility.[2]

THE NORMAL AMOUNT OF SLEEP

In estimating the normal amount of sleep, it is possible to introduce an element of mathematical exactness. Certain standards are required for comparison, chiefly regarding sleep.

So far as concerns the present discussion, it is sufficient to know that a large share of the public of whatever age needs at least eight hours of rest daily. Those persons requiring the most are presumably the ones who break soonest on curtailment. The amount a patient previously secured has to be reckoned up as exactly as possible, if the relation to epidemic encephalitis is to be calculated.

In the cases in which the sleep allowance was figured with some definiteness (eighteen out of twenty-eight), the amount in each was well under seven hours, usually six and a half or less. In the other ten cases the facts were similar but were not determined with the same exactness.

The sleep requirement of individuals differs, but only within moderate limits. When the total is cut down to seven hours for any length of time the average person is taking risks. Some appear to tolerate it, but many then evidently become sensitized. And any further reduction or temporary bad break makes the candidate eligible for various ailments including the sleeps.

COMMENT

The cases given, with many more at hand, indicate that we have here a causative factor that is at least common. The cases include both acute and chronic forms in males and females from 15 to 56 years of age at onset. Regarding the uniformity of occurrence, the most direct evidence to be cited is the fact that my last fourteen consecutive private cases are included in this report. These cases embrace all the eligible patients seen last year and this, and show what can be found by closer attention.

Circulation.—Chronic valvular leaks (two cases), low blood pressure and suboxidation naturally accentuate the effect of tire, and are overfrequent in the histories.

Syphilis.—To avoid any question of its possible relation, all cases with any suspicion of syphilis, past or present, or with positive Wassermann reactions, were excluded.

Study and Examinations.—The increase in number and complexity of subjects imposed on the student class, with the sequent limitation of rest and sleep, affects most of the younger element in the community. There is also a great multiplication of present-day examinations. Insomnia and other morbid tendencies are favored. Midwinter examinations with us mature a seasonal crop of epidemic encephalitis (two out of twenty-eight in this series).

2. When the paper was read, a physician who had suffered from epidemic encephalitis offered his experience in full corroboration.

In Children.—Bramwell, in a review, concludes that epidemic encephalitis "is very uncommon or at least seldom recognized in childhood." From the few cases seen, educational excesses as just noted are prominent in the histories of patients with epidemic encephalitis before the teens. My associate, Dr. O. C. Perkins, finds that these young victims are of the mentally active class. Parents are not always aware of children's need of longer sleep, or permit undue abbreviations.

Cases Before School Age.—These cases may need separate study. A couple of points are to be noted. Both serous and tuberculous meningitis at this age have often proved difficult to distinguish from epidemic encephalitis. Sundell [3] says, "Of the twenty-four hours of the day, the new-born infant sleeps for twenty-two, the baby of 6 months for eighteen, and the child of a year for fourteen.

Suggestive is the mention in the English report [4] of the "case of a young child who had recently obtained two 'firsts' at a baby show," which certainly must have disturbed its rest.

Several cases have been reported in which nursing infants appear to have taken it in some way from affected mothers, suggesting a modified form of development.

Causative Trends of Modern Life.—Are there features of recent development in our mode of living that in this sense might contribute? Many can be mentioned, such as the phonograph (now less in evidence), telephones, movies, the radio after midnight, automobiles, various Volstead effects, subways and tunnels in large centers, clubs and lodges, cross-word puzzles and other innovations. Improvements in illumination favor night life, in part at the expense of rest. So many of the changes in common activities involve abridgement of rest. Collectively, they furnish a large background when added to older customs. In populous centers all these evils are massed, affording a plausible explanation of the urban excess.

Not to be forgotten are the recent prophets who delude many with the idea that little sleep is necessary.

What corresponding malconditions are active in other countries can be left to their investigators.

A Preliminary Period.—This does not refer to the common "prodromal stage of from one to ten days" with grippal symptoms, but to forerunners of a break, premonitory warnings extending back from a month to a year or more before the acute stage. A suggestion of this was noted in six cases of this series, and is recorded in three of Tilney and Howe's [5] cases. Wimmer [6] enlarges on this point.

These manifestations are largely such as follow sleep deprivation, and are what might be expected when such an etiologic factor is in play. It does not prove or disprove infection, though it makes less imperative the view that it is a specific distemper. Occasionally these signs mass in a kind of preliminary outbreak, as remarked in the 1922 English report.

A study of these antecedents might afford means of recognizing impending trouble, and so help to ward off attacks. Tracing back the history would parallel the method of the present study, and probably meet with less obstruction.

Relation of Sequelae and Relapses.—In the after-phase as well as in the inception, this factor can play a

3. Sundell, C. E.: Practitioner **109**: 89 (July) 1922.
4. British Ministry of Health, 1922, p. 40.
5. Tilney, Frederick; and Howe, H. S.: Epidemic Encephalitis, New York, Paul B. Hoeber, 1920, pp. 33, 149, 179.
6. Wimmer, A.: Chronic Epidemic Encephalitis, 1924.

rôle. When nominal recovery occurs it follows a variable period of disability. The patient then either feels the pressure of financial necessity or has an accumulated craving for former diversion. It is not unusual for such persons to remark that they are "going to have a good fling" to make up. Inhibition is still weak, and they drop back into careless living. Other evils doubtless cooperate.

An Aid in Diagnosis.—The principle proves at times of value in diagnosis. Uncertain cases are not rare. When there is any question, this element becomes an essential part of the history. Per contra, inability to uncover such a factor has repeatedly led to further and decisive study.

If experimenters gave attention to suitably exhausting their animals, they might score more definite knowledge of the modus of the ailment.

Susceptible Classes.—We can now glance back at the groups that show a special tendency to develop epidemic encephalitis and see how they comport with this form of etiology.

Men, more than women, tend to follow irregular living, and with us are more numerous in night occupations. Nurses afford a similar record to physicians.

Immigrants average a more strenuous existence, often including night work. This is accentuated when they have to learn a new language.

Pregnancy and parturition bring greatly increased demands on the individual, as also do infections and operations. Neurotic antecedents, as in several of Wimmer's cases, are naturally contributory.

That the vigorous and hardy fall to the count is to be expected, as they are more reckless in health matters than are those who are compelled to conserve their energies.

The susceptible persons prove to be those subjected to special strain, leaving no great margin for primary lack of resistance.

Personal Prophylaxis.—While there is no wholly satisfactory method of treating epidemic encephalitis, in the matter of prevention we have more chance of success. On the basis described I have no hesitancy either in advising the anxious how to avoid it, or in assuring them of safety if they follow proper living. Mild and incipient cases yield well to this plan. It might not be amiss to reinstall the curfew and the fine old habit of seasonable retiring. Individuals can take care of themselves in most cases without waiting for outside protection.

Infections, pregnancies, operations and infancy may still call for extra care.

It is often gratifying to note the prompt heed paid by those intact to this warning. Many a fond parent evinces a cheerful alacrity in applying the new brake. However, advising the afflicted requires so-called moral support or any other kind available.

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ABSTRACT OF DISCUSSION

DR. EDWIN G. ZABRISKIE, New York: Dr. Browning has almost started something that may create a reaction against further infringement of our personal liberties, but I sure that the warning he has conveyed to us today is of extreme importance. What centers or what parts of the brain are most exhausted by the attacks of fatigue that he has discussed today I do not know that anybody is prepared to say; but I, at least, feel the extreme importance of his warning in the connection of fatigue with especially an existing infection of some sort and the development of epidemic encephalitis.

THE EXCRETION OF NEUTRAL RED INTO THE HUMAN STOMACH *

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Following the introduction of phenolsulphonephthalein as a test of renal function, the analogous use of dyestuffs to test the function of other organs has been attempted. For instance, phenoltetrachlorphthalein, indigocarmin and methylene blue have proved of some value as liver function tests. On account of the ease with which gastric contents may be recovered, and the fact that certain dyestuffs are readily excreted into the stomach, chromoscopy has also recently been applied to the study of the secretory function of the stomach.

Fuld, in 1908,[1] had observed that neutral red was excreted by the gastric mucosa. Finkelstein,[2] using a Pawlow pouch in dogs, found that the neutral red was excreted in the gastric juice in large quantities and that fluorescin and methylene blue were excreted only in traces, while eosin, indigocarmin, phenolsulphonephthalein, congo red, acridin red and phenoltetrachlorphthalein did not appear in the stomach after subcutaneous administration. Saxl and Scherf [3] reinvestigated the excretion of dyestuffs in the stomach of human beings, rats and rabbits. Glaessner and Wittgenstein [4] selected neutral red to study the secretory function of the human stomach. The findings of these observers with reference to the use of the dye as a test of gastric function are conflicting. Saxl and Scherf deny its value, while Glaessner and Wittgenstein find it very valuable. The latter assert that the excretion in the fasting stomach of neutral red follows closely the gastric acidity; i. e., in the normal, the dye appears in from eleven to fifteen minutes; in anacidity, the dye is not excreted; in hypoacidity, it appears in from twenty to sixty minutes, and in hyperacidity, in from seven to eight minutes. Recently Carnot and Gaehlinger [5] repeated this work and agree with the findings, saying, "In general there seems to be a correlation between the free acidity and the time of the elimination of the neutral red."

In view of the comparative novelty of the subject and the small but conflicting literature, it seemed important to make further studies. As a preliminary investigation, a series of forty-six unselected, ambulatory patients in the gastro-intestinal division of the outpatient department were studied as follows: The patients presented themselves with a fasting stomach; the Rehfuss tube was passed, and 2 c.c. of a 1 per cent. solution of neutral red (Ehrlich's neutral red was freshly dissolved in distilled water and boiled) was injected intramuscularly in the gluteal region. The gastric contents were aspirated every two minutes until the dye appeared as a definite pink discoloration. If no dye appeared, the aspiration was continued for two hours. Rehfuss, Ewald, alcohol and meat extract test meals were employed to confirm the acidity figures, particularly in the patients with achlorhydria. The observations are recorded in the accompanying table.

* From the medical department of Mount Sinai Hospital.

1. Fuld: München. med. Wchnschr. **43**: 908, 1908.
2. Finkelstein, R.: Arch. f. Verdauungskr. **30**: 299, 1922.
3. Saxl, P., and Scherf, D.: Wien. klin. Wchnschr. **36**: 671 (Sept. 20) 1923.
4. Glaessner, K., and Wittgenstein, H.: Klin. Wchnschr. **2**: 1650 (Aug. 27) 1923.
5. Carnot, P., and Gaehlinger, H.: Paris méd. **2**: 377 (Nov. 8) 1924.

COMMENT

In the thirty-six cases in which the dye appeared, the average excretion time was twenty-two minutes. There does not seem to be a close correspondence, when free hydrochloric acid is present, between the degree of the acidity and the time of excretion. In general, however, the patients with hyperacidity excreted the dye earlier; eleven patients with hyperacidity averaged seventeen minutes (of these, seven had duodenal ulcer). The subacidity cases, contrary to expectation, gave a normal average—twenty-one minutes in seven cases. Thirteen patients with normal acidity averaged twenty-one minutes. The excretion of the dye was observed in twelve cases of true achylia gastrica; i. e., there was a persistent absence of free acid and ferments. In three cases it appeared in sixty-five, ninety and ninety minutes, respectively. In the other nine, it did not appear in two hours. A study of the table with reference to the disease reveals that nine patients suffering from duodenal ulcer excreted the dye in the average time of thirteen minutes, and one in thirty minutes; two patients with gastric ulcer in twenty-three minutes; nine patients with chronic disease of the gallbladder, in seventeen minutes; and two patients with cholecystitis and achylia gastrica showed no excretion.

Results of Observations

Patient	Disease	Free Hydrochloric Acid	Total Acidity	Dye Excretion in Minutes
1	Achylia gastrica	0	12	65
2	Gastric neurosis	38	..	25
3	Ulcerative colitis	40	..	45
4	Achylia gastrica	0	15	90
5	Gastric neurosis	30	40	20
6	Cholecystitis	30	50	15
7	Constipation	40	60	15
8	Constipation	20	..	14
9	Gastric ulcer	18	30	22
10	Gastric ulcer	40	80	25
11	Ulcerative colitis	35	52	18
12	Duodenal ulcer	50	80	15
13	Duodenal ulcer	30	40	30
14	Gallstones	45	55	16
15	Duodenal ulcer	60	78	16
16	Gallstones	50	70	16
17	Gallstones	22	36	16
18	Pulmonary tuberculosis	9	33	18
19	Duodenal ulcer	9	21	16
20	Gallstones; achylia gastrica	0	10	No excretion
21	Ulcerative colitis	28	42	12
22	Achylia gastrica	0	10	No excretion
23	Achylia gastrica	0	10	No excretion
24	Pernicious anemia; achylia gastrica; syphilis	0	12	No excretion
25	Gastric neurosis	31	64	27
26	Duodenal ulcer	70	80	12
27	Gallstones ?	0	14 (Fasting)	12
		0	6 (Ewald)	Present
		25	40 (Rehfuss)	12
28	Gastric neurosis	8	18	46
29	Syphilis	23	..	23
30	Gallstones	30	80	25
31	Achylia gastrica	0	10	90
32	Constipation	30	38	47
33	Duodenal ulcer	20	30	13
34	Gallstones	20	40	15
35	Achylia gastrica	0	10	No excretion
36	Achylia gastrica	0	12	No excretion
37	Achylia gastrica; mucous colitis	0	15	No excretion
38	Duodenal ulcer	41	61	12
39	Gallstones	5	9	16
40	Duodenal ulcer	16	32	16
41	Duodenal ulcer	52	60	12
42	Gastric neurosis	42	65	15
43	Duodenal ulcer	62	74	10
44	Achylia gastrica	0	24	No excretion
45	Constipation	8	20	14
46	Syphilis; duodenal ulcer	18	25	15

A few facts seem to be brought out by this preliminary study. Apparently, in certain irritable conditions in or near the stomach, such as hyperacidity, duodenal ulcer and disease of the gallbladder, the time of the appearance of the dye is somewhat hastened. However, the variation in the excretion time of the dye is so little, and the correspondence of this variation to the disease present is so inconstant that the test appears to have little, if any, diagnostic value. The failure of the dye to be excreted before at least an hour, if at all, in the cases of true achylia gastrica seems more important and of some value in the study of disturbances of the secretory function of the stomach.

For example, in a case of cholelithiasis, the ordinary methods of study disclosed an achlorhydria both in the fasting contents and after an Ewald test meal. The dye, however, appeared in twelve minutes. A confirmatory Rehfuss test meal revealed 25 degrees of free hydrochloric acid. This case suggests the possible use of the dye to distinguish true from false achylia gastrica.

This question, as well as the excretion of the dye in patients with pernicious anemia, gastric carcinoma, achlorhydria and heterochylia, and in partial gastrectomy, is now being investigated. A study of the excretion of the dye as influenced not only by the normal physiologic stimuli, but also by pharmacologic agents, such as pilocarpin and histamin, is also planned.

SUMMARY

1. The excretion of neutral red into the stomach was investigated in forty-six cases.

2. Patients with normal or subnormal free hydrochloric acid figures excrete the dye in a fairly constant average time of twenty-one minutes.

3. In hyperacidity, the time of the appearance of the dye is hastened to seventeen minutes. Patients with duodenal ulcer or gallbladder disease, with or without hyperacidity, often show a similar figure.

4. In achylia gastrica, the excretion time is greatly prolonged to an hour or more. In most cases the dye does not appear in the stomach.

5. These preliminary observations suggest that the test may prove of value, in addition to the usual methods, in the study of the secretory function of the stomach, particularly in the various forms of achlorhydria and achylia gastrica.

Clinical Notes, Suggestions and New Instruments

ANGINA PECTORIS IN A YOUTH OF EIGHTEEN

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History.—M. S., a boy, aged 18, white, was admitted to the medical service of Mercy Hospital, March 12, 1925, at 6 p. m., complaining of agonizing pain over the whole surface of the chest and the epigastrium. This pain was not referred to the arms or to any other part of the body; it was constant, though it waxed and waned in intensity. He had suffered in this manner throughout the day, though not so intensely. There had been nothing unusual in his habits, diet, health or exercise to account either to himself or to his family for the occurrence of this seizure; he had never had a previous attack. During the few days preceding, there had been no symptoms of ill health, and this attack was ushered in with no symptoms except the pain.

March 3, the patient had been admitted to the surgical clinic of Mercy Hospital because of pain in the right lower quadrant of the abdomen. A tentative diagnosis of chronic appendicitis was made by the surgeon in charge, Dr. E. A. Ficklen, but operation was not advised at the time, as the signs and symptoms did not warrant a positive diagnosis. This attack is said to have lasted only a few hours. The boy's mother said that her son had enjoyed splendid health

in the past; that he went in for strenuous athletics and heavy physical work, which did not seem to be limited by undue fatigue or breathlessness. She did not remember that he had ever had a sickness, and he had been particularly free of the usual diseases of childhood. She was positive that he had never had scarlet fever, diphtheria, tonsillitis, rheumatism or chorea. There was no history of venereal disease. The father had an aneurysm, of which he died at about 40. The mother had bronchial asthma, and congenital miosis of both pupils, but circulatory disease could not be demonstrated. Her blood was negative to the Wassermann test. Other members of the family were said to be in good health, though accurate details could not be obtained.

Physical Examination.—The young man was of the Alpine type, well developed and well nourished. He sat up in bed, but was bent forward, as one in great pain. His face was flushed and covered with sweat; his expression was anxious. The temperature was normal; the pulse full and regular, beating 100 times a minute. The blood pressure was 120, systolic, and 80, diastolic. The apex beat of the heart was located in the fifth interspace, inside the nipple line; the impulse was regular, not diffused or heaving, and there were no thrills. Percussion revealed no cardiac enlargement. Auscultation found the heart sounds regular and clear, and there were no murmurs. Examination of the lungs revealed no abnormalities (a particularly careful examination was made for dulness and râles at the bases). The examination of the abdomen was negative, except for moderate rigidity in the epigastric region. The genitals appeared normal. The urine contained no albumin, sugar or casts. The patella reflexes were present and equal. The pupils were miotic, and did not react to light or to distance (the state of the pupil was said by the mother to be congenital, and was identical with her own). The teeth were in good condition, and the tonsils were not enlarged or inflamed.

Course.—The patient was given one-half grain (0.03 gm.) of morphin by needle, without much relief; this was repeated in a few hours, with only transient relief. The application of ice caps had no effect. Nitroglycerin was not given, nor was amyl nitrite. There was vomiting of a frothy mucous fluid on several occasions. At no time did the pulse become rapid or irregular, and cyanosis did not develop. About 3 o'clock on the morning of March 13, at the height of a severe paroxysm of pain, the patient suddenly died. Prior to death, the diagnosis of angina pectoris was not considered on account of the patient's age.

Necropsy Findings.—At necropsy, the heart was found to weigh 240 gm. The coronary arteries were tortuous and rigid. The myocardium was light brown and of firm consistency. In the interventricular septum, the anterior wall of the left ventricle and the papillary muscle of the left ventricle were irregular areas, varying in size from about 0.5 to 1 cm., which were pale and sclerotic (healed infarcts). The endocardium showed a few small plaques of sclerosis about the base of the tricuspid valve. The right auricle was dilated. The coronary arteries, when opened, showed numerous yellow and gray areas of sclerosis throughout. Near the origin of the right anterior coronary artery was found a large excrescence (organized thrombus), which had almost occluded its lumen; this thrombus showed marked calcareous infiltration. The valves were normal. Microscopically, all the blood vessels showed proliferative endarteritis. Many of the smaller vessels were completely occluded, while the larger ones were atheromatous, with hyaline degeneration and calcareous infiltration. There were focal areas of cloudy and fatty degeneration, and diffuse and localized connective tissue increase (fibrosis and scar formation) throughout the myocardium.

The omentum was found attached by fairly recent adhesions to a small area over the outer third of the appendix, which measured 6.5 cm. in length, was somewhat thickened and showed near the tip a small injected area about the size of a pea. The lumen was almost obliterated by scar tissue. Microscopically there was found subacute and chronic exudative over chronic proliferative (obliterative) appendicitis.

The liver weighed 1,500 gm.; it was enlarged and was brownish gray, with white striations of scar tissue over the surface. The cut surface was of a mahogany color with congestion of the central veins and some increase of connective tissue. Microscopically there was marked congestion (central), slight connective tissue increase (intralobular), fatty and granular degeneration, and an area of acute exudative (suppurative) inflammation (focal abscess).

Nothing of note was demonstrated in the other organs of the body.

SUMMARY

The organs presented an acute (toxic) inflammation, with a small (microscopic) abscess of the liver, secondary to an infection of the appendix, which at the time of death was in a subacute stage. The sudden death was the result, not of the foregoing infection (which, however, may have been contributory) but of the disease of the vascular system of the heart itself, as described above. The changes noted in the vessels of the heart and also in many of the smaller vessels of the other organs were characterized by primary changes in the intima, with marked proliferation of the endothelium. This character of lesion is the result of a diffusible toxin acting directly through the circulation. The absence of perivascular round cell infiltration in any of the vessel walls or elsewhere or other gross or microscopic evidence of syphilis in the organs rules out syphilis as the etiologic factor. Likewise is the absence of any Aschoff bodies in the heart against a rheumatic etiology.

It seems possible that the injurious agent (toxin) responsible for the vascular changes came from the appendix during its acute and chronic stages of inflammation.

COMMENT

True angina pectoris in a person under the age of 20 is very rare. Houchard[1] quotes Gauthier's report of its occurrence in four patients between the years of 10 and 20, proved at necropsy, and also Walter Maxon's necropsy of a child of 11, whose coronary arteries showed sclerosis. Powell[2] reports no cases under the age of 20, but quotes Dreschfeld's report of a boy of 12, who had the symptoms of angina pectoris and who died suddenly in an attack, but no reference is made to a necropsy of this case. The more modern textbooks and systems of medicine make no reference to cases occurring in the young, and confine themselves to the statement that the disease is rare under 40.

It is interesting that there is no evidence of syphilis in this case, and also that there is no disease of the aorta. As the necropsy in this case was performed at an age before the arterial changes of later life could come on and confuse the pathologic picture, it seems to lend strong support to the prevalent idea that angina pectoris is due to changes in the coronary arteries, and, to a certain extent, to refute the theory that syphilis and aortitis play a necessary part in the production of this syndrome. It seems that, in this case, the plausible idea is that the cardiac changes were the result of a focal infection, the original focus being the appendix.

1524 Seventh Street—3625 St. Claude Avenue.

1. Houchard, Henri: Maladies du cœur, Ed. 2, Paris, 1893.
2. Powell, Douglas, in Allbutt and Rolleston's System of Medicine **6**: 172, 1909.

Management of Delinquent Children.—Of the 879 supervised institutions in New York State, twenty are conducted for delinquent children, while several receive only truants or those with improper guardianship. This does not take into consideration the various orphanages, many of which accept delinquent or neglected children under special conditions, or of the mentally defective delinquents in the several state schools for the feebleminded. Of the group of twenty just mentioned, three are controlled exclusively by the state, seven are maintained by the Roman Catholic Church, four are nonsectarian, two are Jewish, one Protestant, two episcopalian, and one is municipal in management and is under the local board of education. The scope of these institutions is becoming increasingly delimited to the care of the truant child. Approximately 6,000 children are cared for in this manner, less than a third of whom are in state institutions.—Branham, V. C.: *State Hosp. Quart.* **10**:611 (Aug.) 1925.

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SATURDAY, OCTOBER 31, 1925

THE DIARRHEAS OF INFANTS

Although the manifestations of the diarrheas of infancy have long been recognized in medical practice and can in most instances be treated with success, the pathogenesis or etiology of such alimentary disturbances remains the subject of uncertainty and debate. For frank bacillary dysentery there is, of course, evidence to incriminate special intestinal invaders; yet the harm that they initiate can be described better in general terms than in specific references to disarranged gastro-intestinal functions. Lack of the "physiologic antiseptic" of the alimentary tract—the gastric juice—or reduced acidity of this secretion has in particular been incriminated in the past. Davison's[1] recent observations at the Johns Hopkins Hospital showed practically no difference in the reaction or cultures of the gastric contents of normal infants and of those convalescent from diarrhea. Streptococci and gram-negative cocci, which are mouth organisms, were more often found, as might be expected, in gastric specimens containing saliva; colon bacilli were more frequent in those contaminated by duodenal regurgitations.

The use of diets containing some form of lactic acid milk has become popular in recent years in the treatment of digestive disturbances of infancy. It seems undoubted that such diets increase the gastric acidity. Davison[1] is unwilling to admit, however, that the acidity, per se, destroys the bacteria present and thus explains the beneficial effects of lactic acid milk feeding. He noted that the reaction of the gastric contents has no apparent relation to the frequency with which various micro-organisms were found in the stomach. Consequently, the suggestion is advanced that the soured milk diets, even though they do not actually kill bacteria after ingestion, may constitute a poor culture medium; so that, as a result, bacterial growth does not flourish.

With respect to the duodenal conditions also, a revision of opinion is ventured. Duodenal cultures were found sterile more frequently in infants whose gastric acidity ranged from p_H 5.1 to 5.7 than in those in which it was p_H 3.6 to 4.4. The reaction of the gastric contents in the cases studied by Davison[2] did not have any apparent relation to the amount of duodenal amylase and trypsin. In the digestive disturbances of infants, especially in diarrhea and to a lesser extent in bacillary dysentery, he found the activity of these enzymes decreased while the hydrogen ion concentration of the duodenal contents and the number of colon bacilli in the duodenum were increased. These "unorthodox" findings call for a new interpretation of the pathologic physiology of the diarrheas. Davison proposes the following sequence of factors to explain the actual happenings in the diarrhea: (1) a primary cause, which still remains undetermined but which may be different in individual cases and include external heat, fever, infections and overfeeding with an undesirable diet; (2) a reduction in the activities of the duodenal enzymes as the result of the primary factor; (3) consequent accumulation of undigested and unabsorbed food residues; (4) invasion of these by organisms of the colon group from the cecum and large intestine, and (5) the decomposition of this food material by the micro-organisms with formation of irritating products that accelerate peristalsis. If such a view is even in part correct, it is evident that the problem of infant diarrhea cannot be envisaged from a single angle.

1. Davison, W. C.: Gastric Analyses in Normal Infants and in Those Convalescent from Diarrhea, Am. J. Dis. Child. **30**: 23 (July) 1925.

2. Davison, W. C.: The Duodenal Contents of Infants in Health, and During and Following Diarrhea, Am. J. Dis. Child. **29**: 743 (June) 1925.

ARCHIVES OF PATHOLOGY

At the last annual session of the American Medical Association, held in Atlantic City in May, a resolution was introduced into the House of Delegates by the delegate for the Section on Pathology and Physiology, urging the establishment by the Board of Trustees of a periodical which would be representative of pathology and allied sciences in this field. At the meeting of the Board of Trustees held in Chicago in September, such a journal was definitely constituted, to be published by the press of the American Medical Association, along the same plan as the other special periodicals now issued, including the *Archives of Internal Medicine*, the *American Journal of Diseases of Children*, the *Archives of Neurology and Psychiatry*, the *Archives of Dermatology and Syphilology*, the *Archives of Surgery* and the *Archives of Otolaryngology*. It may safely be said that these journals have earned high repute in their fields not only as the leading periodicals in the specialties they represent but also for the manner in which they have advanced the progress of medical knowledge through affording investigators suitable mediums for the expression and interchange of opinion. Since the first of these peri-

odicals, the *Archives of Internal Medicine*, was established, in 1908, the Board of Trustees has been constantly besieged by representatives of various departments of medicine to add to the list. It was these considerations, no doubt, that moved the Board of Trustees to give favorable consideration to the newest member of the group—the *Archives of Pathology and Laboratory Medicine*.

As many readers are no doubt aware, several periodicals devoted to pathology are already available both in this country and abroad. However, it was the belief of the representatives of the Section on Pathology and Physiology, of the Board of Trustees and of the editorial staff of the Association that none of these periodicals are representative of all of American pathology, and that there exists opportunity for the development of a complete journal along a scale similar to that of the other special journals.

The Board of Trustees selected as the first editorial board: Dr. Ludvig Hektoen, Chicago, local editor and chairman of the board; Dr. James Ewing, New York; Dr. W. G. MacCallum, Baltimore; Dr. William Ophüls, San Francisco; Dr. Alfred Stengel, Philadelphia, and Dr. S. B. Wolbach, Boston. This editorial board, working with the editorial staff of the Association, proposes to issue a periodical which will contain original articles in the field of pathology and laboratory investigation, abstracts of current literature on pathology, the transactions of important pathologic societies, news of those working in the field of pathology, a department of medicolegal pathology, reviews of new books on pathology, and monthly reviews of the present state of our knowledge of such topics as heredity, constitution and disease, lymphogranulomatosis, cancer, allergy, nephritis and nephrosis, and postmortem methods. A special section also will be devoted to new technical methods used in the laboratory and in the postmortem room, and, indeed, to all of those procedures which have been classified under the somewhat colloquial term, "laboratory medicine."

The growth of scientific medicine has resulted, not in a departure from the fundamental investigations of anatomic changes within the human body during and subsequent to disease, as was perhaps expected by some, but, indeed, in an intensification of the belief that a knowledge of pathology is absolutely fundamental to successful diagnosis and treatment in every field of medicine. Virchow, it has been pointed out, realized that pathology embodies both the anatomy and the physiology of the abnormal organ. German investigators, however, concentrated their attention on morbid anatomy, and Great Britain and France up to fairly recent times practically limited pathology to anatomic findings in the postmortem room. The modern experimental conception of pathology, as pointed out by Flexner, has developed a type of pathologist who is at the same time investigator and teacher in the school of medicine and pathologist to the hospital in intimate contact with the diagnosis and treatment of disease. Indeed, the modern medical school is likely to be built around the pathologic unit as the very heart of the institution. In this situation, when pathology as a science is beginning to come wholly into its own, it is well that American physicians should have from the first an authentic, independent organ ready to serve for the advancement of knowledge.[1]

THE NEWER GASTRIC PHYSIOLOGY

When Beaumont began his pioneer observations on Alexis St. Martin, the human carrier of a gastric fistula, he was familiar with studies on the functions of the stomach by several eminent predecessors and contemporaries. One might suppose, therefore, that after all the intervening years the behavior of the gastric mechanisms would have been well established. Despite this, however, there have been reversals of opinion as well as important increments of knowledge regarding the working of the abdominal organ in which the alimentary processes are initiated. Scarcely a detail of the story has not been challenged or denied at one time or another. From the standpoint of clinical physiology, this is unfortunate. The problems of gastro-enterology have often become confused because of the "instability" of the information that has been brought to bear on some of them. The history of the study of gastric physiology would furnish striking illustrations of the impediment that dogmatic assertions supported by the authority of a prominent person may introduce into the development of dependable knowledge.

Caution, a critical attitude and intellectual courage —the indispensable attributes of a real scientist—are nowhere called for more insistently than in the contemplation of the causes of gastric secretion and motility. Ivy,[2] newly appointed professor of physiology at the Northwestern University Medical School, has discussed some of the recently accumulated evidence that points to the desirability of reorganization of our knowledge in this field. He believes that gastric secretion can be divided into three phases with reference to cause: 1. The cephalic phase, caused by reflexes through the cerebrum (psychic) and by reflexes through the thalamus, midbrain and medulla, excited by the sight, taste and smell of food in the presence of appetite. 2. The gastric phase, caused by mechanical distention of the stomach and by the action on or by way of the gastric mucosa of substances in the food. 3. The intestinal phase, caused by the action on or by way of the intestinal mucosa of substances in the food or resulting de novo from digestion.

1. The Archives of Pathology and Laboratory Medicine, to be published monthly by the American Medical Association, 535 North Dearborn Street, Chicago; first issue, January, 1926; subscription price, $6 annually.

2. Ivy, A. C.: Contributions to the Physiology of the Stomach, IX, The Causes of Gastric Secretion: Their Practical Significance and the Mechanisms Concerned, J. A. M. A. **85**: 877 (Sept. 19) 1925.

The existence of true psychic secretion has long been recognized. The fact that decerebrate animals will secrete gastric juice after excitation that proceeds from the head region is new and shows that other than solely cerebral reflexes are concerned therein. The recent reestablishment of the validity of Beaumont's observations on the effectiveness of mechanical factors as stimuli for gastric secretion has already been referred to in The Journal.[3] Ivy has indicated how this may be related to the clinical pathology of the hypernormal secretion that is associated with pylorospasm or pyloric stenosis. The retention of food in the stomach tends, through mechanical stimulation of the mucosa, to augment the gastric phase of secretion. The intestinal phase also is augmented because the chyme is more completely hydrolyzed, as the result of its retention in the stomach, so that when it is ejected into the duodenum it is more readily and rapidly digested. This more rapid digestion in the intestine means an increase in the concentration of secretagogues acting on or by way of the intestinal mucosa.

The beautiful demonstration that a sequestered and transplanted gastric pouch will secrete an acid juice through the influence of foods in the alimentary tract reinforces the belief that a humoral mechanism, as well as a nervous one, is concerned in the secretory act. This seems to be true whether or not there is some specific secretagogue or "gastrin" concerned as a hormone for the secretion or whether the provocative substances that act through the blood stream are merely ordinary food components. From a practical standpoint it is noteworthy that meat is the only food thus far studied containing a substance that stimulates on contact with the gastric mucosa.

THE COLORATION OF SUBDURAL BLOOD CLOTS

The much debated problem of the extrahepatic formation of bile pigment, to which reference has repeatedly been made in The Journal,[4] has found its solution in the positive demonstration that the liver is not essential to the production of bilirubin. Perhaps the most convincing evidence has been furnished by Mann's experiments at the Mayo Clinic, wherein it was observed that in the urine, blood plasma and fat of totally dehepatized dogs a yellow pigment appears which gives a positive reaction to all the accepted chemical tests for bilirubin. More recently, Mann, Sheard and Bollman[5] have made the evidence for the identity of the yellow pigment even more convincing. They have determined the curve of light transmission of the pigment and compared the curves obtained with the bilirubin in the plasma of a control dog having the common bile duct obstructed and gallbladder excised, with the curve produced by bilirubin removed from the gallbladder of the dehepatized animals at the time of operation. The general character of all the curves was the same. This would seem to be final evidence, as the physiologists contend, that the pigment which develops in the dehepatized animal is bilirubin, and that extrahepatic formation of bile pigment is possible. Rich likewise has lately corroborated the observation that the intra-abdominal organs are not necessary for the formation of bilirubin; consequently there can be little if any doubt that the liver must be considered to some extent as an excretory organ for this pigment.

These findings with respect to the extrahepatic genesis of bilirubin give a new significance to a phenomenon that has attracted neurologic surgeons in connection with chronic subdural hematoma. Cushing[6] has drawn attention to the peculiar greenish appearance often noted on the dural surface of the partly organized blood clot. The unusual color may sometimes be recognized through the semitranslucent dura. Though a discoloration of the dura of some sort is commonly observed in these cases, it is variously described.

Although there are as yet no records of discriminating tests of these greenish surfaced clots, Berglund of the Harvard Medical School is reported to have examined the dark, greenish fluids obtained from some of the intracranial tumor cysts, and demonstrated that the color is due to biliverdin. There is a likelihood, therefore, that the unusual colors of the subdural hematomas are attributable to an extrahepatic formation of biliary pigments. The demonstration of such products, notably under the designation of hematoidin, which may occur in crystal masses in old blood clots, has a long, familiar history. Cushing points out, however, that apparently it is only on the surface of the subdural hematomas that a sufficient amount of bile pigment is deposited to produce the deep icteric color under consideration. Present-day students of the subject have regarded the transformation of hemoglobin into biliary pigment as a function of the endothelial clusters widely distributed in the body, of which the Kupffer type is the best known. These represent the so-called reticulo-endothelial system. Following this suggestion, Cushing believes it safe to assume that the mesothelial cells of the leptomeninges are in their action similar to if not identical with the cells of the reticulo-endothelial apparatus as it has been described by pathologists in other parts of the body, more particularly in the liver and spleen; and as a part of this apparatus that they possess among other properties the ability to transform

3. Beaumont Corroborated, Current Comment, J. A. M. A. **84**: 1276 (April 25) 1925.

4. Where Are the Bile Pigments Formed? editorial, J. A. M. A. **81**: 2116 (Dec. 22) 1923; The Reaction of the Bile and Gallstone Formation, ibid. **82**: 1127 (April 5) 1924; Origin of the Bile Salts, ibid. **83**: 444 (Aug. 9) 1924; Formation of Bile Pigment Without the Liver, ibid. **83**: 534 (Aug. 16) 1924.

5. Mann, F. C.; Sheard, C. H., and Bollman, J. L.: Studies on the Physiology of the Liver, XI, The Extrahepatic Formation of Bilirubin, Am. J. Physiol. **74**: 49 (Sept.) 1925.

6. Putnam, T. J., and Cushing, Harvey: Chronic Subdural Hematoma, Arch. Surg. **11**: 329 (Sept.) 1925.

hemoglobin into bilirubin and biliverdin. These subproducts, indeed, become so heavily deposited on the surface of a long standing subdural hematoma as to give it an unmistakable icteric color. On the other hand, Cushing assumes, when the clot has been removed the subpial surface of the compressed brain will usually be found to have the yellowish color commonly observed in old cerebral extravasations of any sort, owing, as Virchow long ago showed, to the presence of hematoidin crystals.

Current Comment

PIGMENTED MOLES

Among the most important and most difficult aspects of a practitioner's work are such little lesions as the nevi. Frequently the physician must decide whether or not a pigmented mole is malignant or benign; and if benign, whether or not it is likely to assume malignancy. The melanin forming cells, specific in their function, are called melanoblasts. These melanoblasts are able to produce pigment and to give rise to other cells of their own nature. They lie in the basal cell layer of the rete malpighii and can produce pigment in response to any adequate stimulus. The production of a nevus involves the departure of these cells from their original epithelial nature and their migration into the corium. This phenomenon may occur anywhere in the body but is found more often on the face and neck, perhaps because of the likelihood there of irritation. Since the cells, after migration, are still capable of producing melanin, they may, after a period of slow growth, become quiescent, or they may undergo malignant change. In those nevi which remain benign, the regression that takes place is a fibrosis. This does not mean, however, that all benign moles will remain macular, become less noticeable and fade in color. Some of them may become warty, nodular and mamillated. The size or contour of the nevus, then, is not in itself an indication of safety or of danger. A complete study of melanomas [1] has just been issued as a monograph, forming a single issue of a foreign periodical. Dr. James W. Dawson there indicates the significant signs in a mole that is undergoing malignant change. Increased vascularity and pigmentation, or superficial ulceration with periods of bleeding and subjective symptoms, are signals of warning. A history of trauma or mechanical irritation is usually obtained in such cases and is not to be taken lightly. Such history and signs justify wide extirpation, and a microscopic study of the tissue removed will show pigmentation and proliferation beyond the area in which pigmentation can be detected by the naked eye. If the extirpation is not sufficiently wide, not only has pathologic tissue been left in situ, but also more harm than good may have been done by opening channels of metastasis into subepidermal layers or into the lymphatic nodes of adjacent regions. Should the lymph nodes be involved, Pringle advises "excision of the tumor, with a good zone of healthy skin around it and a somewhat larger zone of the underlying deep fascia, up to and including the nearest anatomical group of glands at least; and all that is removed should be in one continuous strip as far as possible."

1. Dawson, J. W.: The Melanomata, Their Morphology and Histogenesis, Edinburgh M. J. **32**: 501-732 (Oct.) 1925.

LOWERED BASAL METABOLISM AND THE PULSE

The existence of a proportionality between the pulse rate and the level of metabolism has been recognized for some time. It has been suggested that the pulse rate multiplied by the pulse pressure may be an even better indicator of the metabolic level than the rate alone. We must emphasize the fact, Du Bois [1] writes, that the pulse rate is a symptom of major importance and should be studied frequently when the patient is at complete rest. Only a rash clinician disregards its warnings. Despite the cogent demonstration that in such diseases as exophthalmic goiter, leukemia and myxedema the basal metabolism and pulse rate go hand in hand, it must be recognized also that the rate of the heart beat is easily influenced by extraneous factors, especially the emotions. The presence of bile salts in the circulation is a chemical influence in the direction of bradycardia. Enlargement of the heart, such as attends certain infections, also affects its rate. It has long been observed that the febrile periods of certain acute infections are sometimes succeeded by a postinfectious period of slow pulse. Schick and Cohen [2] of the Mount Sinai Hospital in New York have just demonstrated that this is also attended with a low metabolism, and is due to the latter rather than to some special factor, such as stimulation of the vagus that inhibits the heart. Schick and Cohen believe that the lowered postinfectious metabolism is caused by a more or less generalized cellular damage which, at times, hits the endocrine glands especially. Only toxic cases seem to have the lowered type of metabolism. The union of laboratory and clinical facts thus demonstrates the "interrelated trinity of pulse, temperature and metabolism, to which we can add respiration."

OUTPUT OF THE HEART IN HEART DISEASE

In a recent issue of THE JOURNAL,[3] in which attention was directed to some new and outstanding features of the circulation, reference was made to Henderson and Haggard's estimate that the blood stream pumped by the heart is about twice as large as was formerly supposed. An excellent heart stroke volume along with an augmented pulse rate provides for an effective oxygen supply even in periods of vigorous demand such as muscular exercise occasions. The quickened circulation furnishes a volume of blood so large in relation to the oxygen consumption of the body that the oxygen content of the venous blood

1. Du Bois, E. F.: Basal Metabolism in Health and Disease, Philadelphia, Lea & Febiger, 1924.
2. Schick, Béla; and Cohen, Philip: Lowered Basal Metabolism in Postinfectious Stages and in Diseases Characterized by Slow Pulse Rate, Am. J. Dis. Child. **30**: 291 (Sept.) 1925.
3. Some Fundamental Features of the Circulation, editorial, J. A. M. A. **85**: 1138 (Oct. 10) 1925.

returned to the heart is surprisingly little below that of the freshly oxygenated arterial supply. In cardiac disease, however, this efficiency may break down, the inefficiency of the circulation showing itself by the increase in arteriovenous oxygen difference above the normal value. Henderson and Haggard [4] found this to be due, in a few patients studied by them, to the smaller "stroke volumes," as they describe the fraction of a liter of blood that each ventricle discharges in one beat. As the pulse rate is generally increased in cases of heart failure, it appears reasonable to infer that the oft noted slowing of the circulation is due to a greater relative decrease in the output per beat. In the evidence collected by Rabinowitch [5] at the Montreal General Hospital, marked and consistent differences were noted between the values in the normal persons and the pathologic cases of various heart lesions, associated with heart failure. Thus the average ventricular output of blood per beat in ten normal persons at rest and without any clinical signs of heart failure was 85.3 c.c., with maximal and minimal values of 99.5 and 70.1 c.c., respectively. In heart failure the figures ranged from 13.6 to 46.2 c.c., with an average output—if these data can properly be averaged—of 27 c.c. One can therefore well understand why such patients are "out of breath" from a degree of physical exertion, and demand for oxygen, that in normal persons involves no considerable decrease of the partial pressure in the tissues.

4. Henderson, Yandell; and Haggard, H. W.: The Circulation and Its Measurement, Am. J. Physiol. **73**: 193 (June) 1925.

5. Rabinowitch, I. M.: The Output of the Heart per Beat in Heart Disease, Arch. Int. Med. **36**: 239 (Aug.) 1925.

Association News

REDUCTION OF MEDICAL TAXES

Representatives of Association Appear Before Ways and Means Committee

At a hearing before the Committee on Ways and Means of the House of Representatives held at Washington, October 21, a presentation of reasons was made for the reduction of the existing war tax on physicians under the Harrison Narcotic Law. The American Medical Association was represented at the hearing by Dr. Charles W. Richardson, Washington, D. C., member of the Board of Trustees, and by Dr. William C. Woodward, Chicago, executive secretary, Bureau of Legal Medicine and Legislation.

Dr. Richardson pointed out to the committee that prior to the war the federal tax or fee paid by physicians for a license under the Harrison Narcotic Law was one dollar. He said that the medical profession of the country gladly accepted the increased war tax of three dollars and that the profession did everything in its power to make the law effective. He said that, as many of the war taxes are being removed, this increased tax against physicians should now in justice be restored to the rate existing prior to the war.

Dr. Woodward stated that it is clearly a question of whether Congress will or will not reduce a war tax; that the present rate of three dollars was effected by the Revenue Act of 1918 along with other increases; that these other increases have, to a large extent, been removed or reduced.

"For a number of years," said Dr. Woodward, "the tax derived from physicians under the narcotic act was nearly a half million dollars greater than the expenses of enforcing the act. Obviously, that was as it should be if one were dealing with a measure intending to raise revenue. Recently, however, the plea was made that inasmuch as approximately half a million dollars a year was being collected under the law, therefore the appropriation should be increased so as to permit the use of the entire amount for enforcing the law. That argument was accepted and an increased appropriation of half a million dollars was made. So it is not fair to take the cost of enforcing the law and fix the tax on that basis."

Representative W. R. Green, chairman of the committee, made the significant remark, "I suppose you are inclined to think that in any event the burden of enforcing the law ought to be on the whole public and not on the medical profession." The remark of Chairman Green may be regarded as the crux of this proposed tax reduction. The enforcement of the law is clearly an expense which should be borne by the public generally and not by the medical profession alone. Under no conditions can it be claimed that the enforcement of a general federal statute should be paid for exclusively by any class or any profession.

Drs. Richardson and Woodward also presented two proposed amendments to the existing federal income tax law: first, authority to deduct expenses incurred in attending meetings of scientific and professional organizations; and second, expenses of postgraduate study.

Dr. Richardson stated that, in the revenue acts of 1921 and 1924, exemptions are permitted to all trades, industries and mercantile organizations that send their representatives to various parts of the country. Dr. Woodward argued that the medical profession should be entitled to the same privilege, which has been denied to physicians under rulings of the Commissioner of Internal Revenue. The extent to which physicians are members of medical organizations and attend their meetings was shown by Dr. Woodward. He stated that inquiries were addressed to ninety-eight medical organizations, and seventy-seven of these reported their membership. The total membership of these seventy-seven medical organizations was 177,219. He stated that the estimated cost of attendance was $1,718,000. On a 4 per cent. basis the tax amounted to $68,726, which is a very conservative estimate of the federal taxes paid by the medical profession under this particular section of the law because of the adverse rulings of the Commissioner of Internal Revenue.

The Committee on Ways and Means will continue to hold hearings for a considerable time, and will then go into executive session for the purpose of drafting the new federal tax bill to be considered at the December session of Congress.

THE DALLAS SESSION

Plans for the Scientific Exhibit

The Committee on Scientific Exhibit calls attention to the fact that those who expect to exhibit at the Dallas session should begin making arrangements sooner than usual, as it will occur the middle of April. Plans for the Scientific Exhibit and Motion Picture Theater Program are under way; as soon as the details have been formulated, further announcement will be made in THE JOURNAL. The circular letter and application blank for the Scientific Exhibit, 1926, will be sent out in about six weeks. Any who desire to receive these should send their names and addresses to Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

Physician and Social Service Worker.—The physician is in charge of the patient; it is his responsibility to diagnose the disease and to prescribe treatment. He is the head of the unit organized for the benefit of the patient; the social worker is a part of his unit. Working with the physician, fitting her specific qualities into the plan of action, her work reaches its greatest usefulness to the patient. Working alone, touching the physician only casually, she cannot function to the best advantage. It is therefore highly important that for the exercise of her primary duty "to further restoration and maintenance of health" she work under the immediate direction of the physician. It is equally important that the physician outline the principles for the social worker to follow.—*Hosp. Social Service* **12**:137 (Sept.) 1925.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Society News.—Dr. Harry Spiro addressed the San Francisco County Medical Society, October 14, on "Modern Diagnosis and Treatment of Heart Disease," and Dr. Ernst Gehrels on "Gastric Surgery." The October number of *California and Western Medicine* publishes a list of about two pages of the names of physicians, and the subjects on which they have volunteered to speak in the extension service of the state medical society.

Gertrude Steele, Naturopath, Wanted for Manslaughter.—The *Police Bulletin*, Oct. 13, 1925, from Los Angeles, reports that Gertrude Steele, "Naturopath," under indictment for manslaughter, is "wanted." In February, 1920, THE JOURNAL recorded that Gertrude Steele had been charged with manslaughter following the death of a "patient" who died in the process of being "beautified." THE JOURNAL in April, 1921, reported that the same woman had had her license revoked by the board of medical examiners. In the issue of Nov. 1, 1924, THE JOURNAL recorded a warning issued by Dr. Charles B. Pinkham, executive officer of the state board of medical examiners, against Gertrude Steele, in which it was stated that although the woman's license had been revoked in 1921, she was still operating. THE JOURNAL for Nov. 29, 1924, stated that Gertrude Steele had been indicted but had not been apprehended, and it was said she had gone to Canada. It was recorded further that a suit for $5,000 against Mrs. Steele had been filed by another victim who claimed to have been permanently disfigured, and a judgment for nearly $3,000 against Mrs. Steele had been given another victim, also alleged to have been permanently disfigured. In February of this year THE JOURNAL recorded that Gertrude Steele had been located in Oberhausen, Germany. The files show that this notorious quack has for years advertised in the Los Angeles *Times*, advertisements appearing as late as January, 1924.

COLORADO

Society News.—The Colorado State Medical Society, at its fifty-fifth annual session at Colorado Springs, conducted an historical exhibit in addition to commercial and scientific exhibits; subjects were assigned to certain counties. According to the president-elect, Dr. George A. Boyd, Colorado Springs, this is the first attempt at an historical exhibit by a state society.

DELAWARE

County Society Prosecutes Chiropractor.—Following the institution of a suit brought by Chiropractor O. M. Heimark against a patient for nonpayment of a bill, the Kent County Medical Society engaged the services of an attorney to prosecute Heimark for practicing medicine without a license, and the state medical society at its annual meeting adopted a resolution approving the Kent County Medical Society's action and offering any financial aid that may be necessary.

State Medical Election.—At the annual meeting of the Medical Society of Delaware, Wilmington, October 13-14, Drs. Olin S. Allen and Richard C. Beebe were nominated vice presidents; Dr. William O. LaMotte, secretary, and Samuel C. Rumford, treasurer. The new president is Dr. John B. Derrickson, Frederica. The nominating committee selected the following names to be submitted to the governor for his selection of two members of the medical examining board: Drs. Henry W. Briggs, William Wertenbaker, Harold L. Springer, George F. Jones, Joseph S. McDaniel, Joseph Bringhurst, Luther S. Conwell, Jerome D. Niles, Joseph W. Bastian and Joseph K. Frame. The next annual meeting will be in Dover in October, 1926.

DISTRICT OF COLUMBIA

Washington's Negro Health Problem.—A special meeting of the directors of the Washington Tuberculosis Association was held in October to consider the death rate among negroes from tuberculosis, which in the last five years has averaged almost five times as high a rate as that of the white population. Among those in attendance were Dr. George M. Kober, president; Dr. Joseph A. Murphy, chief sanitary inspector of the public schools; Dr. Frederick C. Smith, representing the U. S. Public Health Service and Dr. Harvey W. Wiley, formerly chief chemist, U. S. Department of Agriculture. It was shown that there was a rapid decline in the colored tuberculosis death rate in the period 1915-1920, but that from 1920 to 1925 there had been no decline. Plans are being made now to examine and follow up every child entering the schools, to extend the nutrition clinics up to the eighth grade in the public schools, to supply help for more of the open window classes, to renew efforts to establish a sanatorium for tuberculous children, and to extend the plan of educating and examining adult workers in industry.

GEORGIA

Hospital News.—The new $275,000 hospital at Fort Benning, Columbus, has been opened. It has a capacity of 102 beds.——The Central of Georgia Railway will build a sixty-bed hospital for employees at Savannah under the supervision of Dr. Craig Barrow.

State Board Election.—At a meeting of the state board of medical examiners at the Piedmont Hotel, Atlanta, October 13, Dr. Clarence M. Paine, Atlanta, was elected vice president; the other officers were reelected; Dr. Jarrett W. Palmer, Ailey, is president, and Dr. Charles T. Nolan, Marietta, secretary-treasurer.

ILLINOIS

Unlicensed Chiropractors.—Five chiropractors were tried in circuit court at Benton, recently, on charges of illegal practice; they were, it is reported, Howard C. Gott and Arthur Coleman, Christopher; Thomas E. Shaw, Benton, and Thomas Heaney and Margaret C. Heaney, Zeigler.

Personal.—Dr. Clyde H. Cable, South Bend, Ind., has been appointed superintendent of the McDonough County Tuberculosis Sanatorium at Bushnell.——Dr. Victor H. Bassett, health officer of Savannah, Ga., has been appointed health officer of the Quincy public health district, Quincy.——Dr. Emil A. Edlen, city physician of Moline, has been elected president of the Moline Public Hospital staff, Dr. Henry S. Bennett, vice president, and Dr. Florence E. Bollaert, secretary.

Cancer Now in Second Place.—The state department of health reports in *Illinois Health News* that there were thirteen diseases, which caused at least 1,000 deaths, in Illinois in 1924. As in the previous year, heart disease was first, but it showed no increase during 1924, and the rate dropped slightly. Cancer, however, moved from fourth place in 1923 to second place among the leading causes of death, partly the result, it is said, of the sharp decline last year in deaths from pneumonia. In 1902, cancer was the cause of 2,542 deaths in Illinois and last year of 6,960, the rates per hundred thousand population being fifty-one and 101, respectively. Violence has become one of the chief mortality problems in Illinois, it was third on the list. Violence, including accidents of all kinds, suicide and homicide, caused 6,867 deaths, and more than 55 per cent. of the victims were between 25 and 50 years of age; nearly one out of every five deaths among people in the state between these ages was due to violence, and the automobile is the chief factor; next, accidental falls, and then railroads. Suicides increased from 886 in 1923 to 1,012, and murders from 709 to 821. Chronic nephritis moved up from fifth to fourth place, and cerebral hemorrhage up to fifth. Pneumonia dropped from second to sixth place (not significant, since it varies so much from year to year), and tuberculosis dropped from sixth to seventh place. About 80 per cent. of the deaths from heart disease were among people more than 50 years of age, and about 75 per cent. of them were more than 60 years of age. Deaths from diabetes were fewer by 128 than in the year before.

Chicago

Hospital News.—A $2,500,000 addition to Cook County Hospital is being planned.——The social service department of the woman's board of St. Luke's Hospital will give its third annual charity ball in the Gold Room at the Congress Hotel, November 13.

Liquor Permits Revoked.—It is reported that the liquor permits of Dr. Samuel S. Epstein, 803 Roosevelt Road, Chicago, and Dr. Roy Griffy, Oblong, Ill., and those of the Raynor Pharmacal Company, 140 West Van Buren Street, and

the Blaine Manor Pharmacy, 4833 North Talman Avenue, were revoked, October 26, by the prohibition director.

Lectures for Nurses.—The Chicago Tuberculosis Institute's annual lectures for nurses began October 21; lectures will be given in various sections of the city until December 16; among the lecturers will be Dr. Daniel P. MacMillan, director of child study of the board of education; Dr. Ethan Allen Gray, medical director of the Chicago Fresh Air Hospital; Dr. Hiram H. Bay of the Chicago Tuberculosis Institute; Dr. Max Biesenthal; Dr. John M. Dodson of the American Medical Association; Dr. Walter W. Hamburger; Dr. Harrold A. Bachmann and Dr. John Leonard Manning.

Resolution on Free Medical Service.—The council of the Chicago Medical Society, at a meeting, October 13, adopted a resolution concerning free medical service, a copy of which will be forwarded to all hospitals and social agencies and health departments in the city. The council held that the Chicago Medical Society should take the initiative in defining medical charity and approved free medical service to all persons who receive charity of any other kind or description. The council, however, views with alarm the tendency of hospitals, social agencies and health departments to pauperize the public by giving free service to those who can afford to pay even a part of the usual fee, and concluded that members of the Chicago Medical Society who aid such institutions in pauperizing the public may be brought before the ethical relations committee.

Personal.—Dr. Frank R. Guido won second place in Part I in September, 1923, and first place in Part II in February, 1925, it is reported, in the National Board of Medical Examiners examination. Dr. Guido took the first two years of his medical course at Loyola University School of Medicine, and the other years at Rush Medical College.——Dr. Daniel P. MacMillan, director of the Child Study Bureau and examiner of teachers, Chicago Board of Education, addressed a meeting of physicians, October 23, at the Logan Square Masonic Temple, preparatory to the coming health pageant to be conducted under the auspices of the Northwest Branch of the Chicago Medical Society. His subject was "Uncared for, Handicapped Children."——Dr. Charles F. Read, formerly superintendent of the Chicago State Hospital, has been appointed head of the department of nervous and mental diseases, Loyola University Medical School.——Dr. Paul R. Cannon has been appointed assistant professor in pathology at the University of Chicago.——Dr. Karl A. Meyer has been appointed to a professorship of clinical surgery at the University of Illinois.

INDIANA

Hospital News.—The City Hospital, Indianapolis, has let the contract for the construction of a $234,000 surgical unit. ——The new $750,000 wing of St. Margaret's Hospital, Hammond, having a capacity of 325 beds, has been dedicated.—— The commissioners of Miami County have agreed to take over and operate the Miami County Hospital, Peru, as a county institution.

Society News.—Elmer V. McCollum, Ph.D., professor of biochemistry, Johns Hopkins University School of Hygiene and Public Health, Baltimore, addressed the Marion County Medical Society, Indianapolis, October 13, following a dinner in his honor.——Dr. Edward C. Kendall, head of the chemical division of the Mayo Foundation for Medical Education and Research of the University of Minnesota, Minneapolis, addressed the Indianapolis section of the American Chemical Society, October 9, on "The Chemistry of the Thyroid Gland and Its Relation to Oxidation."——Dr. John L. Tierney, St. Louis, addressed the Seventh District Medical Society, Martinsville, October 28, on "A Consideration of Cardiovascular Renal Diseases."

IOWA

Society News.—Dr. Paul A. O'Leary of the Mayo Clinic, Rochester, Minn., addressed a joint meeting of the Scott and Rock Island County medical societies at Davenport, October 6, on "The Treatment of Syphilis," illustrated by lantern slides.——Among the speakers at the state conference on social work, Iowa City, October 23, were Dr. William A. Evans, Chicago; Dr. Fred M. Smith of the University of Iowa Medical Faculty; Dr. Matthew U. Chesire, Marshalltown, and Dr. Don M. Griswold, state health commissioner. ——Dr. Thomas F. Beveridge, Muscatine, has been elected president of the Southeastern Iowa Medical Society; Dr. John P. Mathias, Mediapolis, vice president, and Dr. Daniel F. Huston, Burlington, secretary.

KENTUCKY

Hospital News.—The Ashland General Hospital, Ashland, has been taken over by the Baptist Church.——Elmwood, Lexington, which has been operated as a sanatorium by Dr. Charles A. Nevitt, has been tendered to the U. S. Public Health Service for use as a trachoma hospital and will be purchased, according to *Hospital Management*, for that purpose in January.

Funds for Crippled Children.—The Kentucky Society for Crippled Children is conducting a campaign to raise $36,000. This society was organized about three years ago and largely through its influence the legislature created a Crippled Children Commission last year and appropriated $10,000 a year for two years. This sum has been found inadequate for the amount of work to be done. Last summer in twelve clinics for crippled children in various parts of the state, about 800 children were examined, and after treatment in hospitals more than 100 of them have been restored.

Policy of State Journal.—The council of the Kentucky State Medical Association reported to the House of Delegates at the annual meeting in Louisville that the net balance, September 1, was $4,996.07 as compared with $1,667.67 on the same date last year. The income from the *Kentucky Medical Journal* was $7,477.22 and the expense of its production $6,660.07. The policy of the state journal for many years has been to publish all papers read at county medical societies. The council recommended that this custom be continued at whatever cost but that the house of delegates determine whether the state journal should publish only such material as the council would select.

LOUISIANA

Hearings for Failure to Report Narcotics.—About twenty-seven physicians and nine druggists were summoned to appear before the state board of health, October 13, to explain their failure to report instances in which they are alleged to have prescribed narcotics. The hearings were in executive session, in accordance with provisions of the state laws.

Mosquito Control Conference.—At the Tri-State Conference on Mosquito Control, New Orleans, October 14, a permanent committee was appointed charged with making a survey of the mosquito situation in Alabama, Mississippi and Louisiana, and Mayor Kennedy of Biloxi was elected chairman. The cost of the survey will be borne by the coast towns and cities. There were about 100 representatives present at the conference, as well as members of the state board of health of Louisiana.

Personal.—Dr. Earl Z. Browne, an assistant professor, Tulane University of Louisiana School of Medicine, has resigned to take up medical missionary work in Mexico.—— William A. Danner, secretary of the American Mission to Lepers, has sailed, according to the *Times-Picayune*, on a tour round the world to enlist the cooperation of governments in a general campaign to eradicate leprosy.——Dr. Paul J. Gelpi, Jr., has been elected president of the visiting staff of Charity Hospital, New Orleans; Dr. Jerome E. Landry, vice president, and Dr. Lucien A. Ledoux, secretary-treasurer.

Milk Ordinance Disapproved by State Board.—The milk ordinance of New Orleans, which is to become effective, Jan. 1, 1926, was disapproved at the quarterly meeting of the state board of health, October 12, the bacterial standard having been considered insufficient. The ordinance provides for the bacterial count of 100,000 for Grade A raw milk and permits a maximum count of 1,000,000 for Grade C raw milk and 500,000 for Grade C pasteurized milk. The state board tentatively adopted at this meeting a regulation requiring a bacterial count of 10,000 for certified milk, 50,000 for special raw milk, and 20,000 for special pasteurized milk. This measure will be tried out for two months, when the board will finally pass on it. The assistant state attorney general has held that cities cannot adopt health measures that conflict with the state sanitary code. They may adopt an ordinance more strict than state requirements but none that require less.

MARYLAND

Medical and Chirurgical Faculty Meeting.—The semiannual meeting of this society will be at Frederick, November 3-4. Dr. George H. Riggs, president, Frederick County Medical Society, will give the address of welcome at a dinner at the Francis Scott Key Hotel, and the response

will be delivered by the president of the faculty, Dr. Lewellys F. Barker, Baltimore. Among the speakers at the scientific session will be Dr. Adolf Meyer, director, Henry Phipps Psychiatric Clinic, Baltimore; Dr. Guy L. Hunner, Johns Hopkins Hospital; Dr. Elmer C. Kefauver, county health officer of Frederick County, and Drs. John E. Legge and George Linthicum, Baltimore.

MASSACHUSETTS

Appointments at Tufts College Medical School.—Dr. Charles F. Painter has been appointed head of the department of the history of medicine at Tufts College Medical School, and Dr. Mark H. Rogers, head of the department of orthopedic surgery. This school opened, September 16, with a freshman class of 146 chosen from more than 600 applicants for admission. The total registration was 490. Dr. James S. Stone, president of the Massachusetts Medical Society, gave an address at the reception given by the faculty to the freshman class, September 28.

Dr. Cushing Lectures in Edinburgh.—Dr. Harvey Cushing, professor of surgery, Harvard University Medical School, Boston, delivered the Cameron-Prize Lectures at the University of Edinburgh the week of October 18, his subjects being: (1) "The Third Circulation"; (2) "The Glandula Pituitaria as We Now Know It," and (3) "Intracranial Tumors and the Surgeon." Among others who have delivered the Cameron-Prize Lectures were Monsieur Pasteur, 1889; Sir Joseph Lister, 1890; Professor Behring, 1895; Major David Bruce, R. A. M. C., 1899; Patrick Manson, 1901; Sir Ronald Ross, 1902; Professor Finsen, 1904; Dr. Simon Flexner, 1911; Paul Ehrlich, 1914; J. J. B. V. Bordet, 1921, and Prof. John J. R. Macleod, 1923.

Society News.—Dr. Francis D. Donoghue, medical adviser, Industrial Accident Board, State House, Boston, addressed the clinical staff of the Boston Dispensary, October 20, on "Industrial Accident and Health Activities."——Dr. John J. Moorhead, professor and director of traumatic surgery, New York Post-Graduate Medical School and Hospital, New York, addressed the Berkshire District Medical Society at Pittsfield on "Treatment of Some Minor Injuries."——Dr. Harlan L. Paine entertained the Worcester District Medical Society at the Grafton State Hospital, North Grafton, October 14. Allan W. Rowe, Ph.D., addressed the society on "Differential Diagnosis of Endocrine Disorders from an Objective Standpoint."——Dr. Edward O'Keefe addressed the North Shore Medical Fraternity at Lynn, October 20, on "Eczema in Infants and Its Dietary Treatment."

MICHIGAN

Tuberculosis Survey.—A section of the city of Detroit was selected a year ago in which to apply all the known reputable means of fighting tuberculosis. The experiment was suggested by the Framingham, Mass., survey, and the Detroit Community Fund appropriated $25,000 for the work last year and will appropriate a like sum for the coming year. There are 101 cases of tuberculosis in this district of the city, exclusive of those under the care of private physicians. Fifty of these cases were discovered by the survey in persons who did not know they had tuberculosis. There are now 578 persons in connection with this work under supervision, and a full-time physician will be assigned, November 1. Dr. Burt R. Shurly, Dr. Fred M. Meader and Henry F. Vaughan, D.P.H., are members of the committee directing the experiment. The object of the investigation, the *Bulletin of the Wayne County Medical Society* says, is to learn just what part a man's health, a man's job and a man's recreation has to do with tuberculosis, and then attempt to make correction.

MINNESOTA

Malignant Smallpox Epidemic Ends.—The secretary of the state board of health recently reported that there had not been a case of malignant smallpox in the state for a month; he attributed this to the state-wide vaccination campaign brought on by the epidemic of smallpox, in which from January, 1924, to September, 1925, there were more than 4,000 cases and 503 deaths; of these, 1,936 were of the malignant type and among them 492 deaths.

Society News.—Dr. Charles Eugene Riggs addressed the Minnesota Academy of Medicine, Minneapolis, October 21, at the Town and Country Club on "The Dynamics of Personality."——Albert P. Mathews, Ph.D., professor and head of the department of biochemistry, University of Cincinnati College of Medicine, addressed the Minneapolis District Dental Society, October 21, on "The Calcium Metabolism of the Body."——Dr. Herman G. Franzen addressed the Hennepin County Medical Society, October 21, on "The Clinical Aspect of Superficial Tumors."

MISSOURI

Hospital for Negro Children.—Mr. William Volker and Mr. Frank C. Niles, Kansas City, have donated $65,000 to erect an addition to the Wheatley-Provident Hospital for ill and crippled negro children. The Wheatley-Provident Hospital, which has been in operation since March, 1922, through a gift of Mr. Niles, is conducted largely in connection with the Children's Mercy Hospital. The staff of the new hospital for negro children probably will be negro physicians.

Society News.—The Jackson County Medical Society, Kansas City, held a symposium on diabetes mellitus, October 20; the speakers were Drs. Russell L. Haden, Frederick C. Narr, Ralph H. Major, Benjamin L. Myers, Joseph S. Lichtenberg, Paul M. Krall and Donald R. Black.——Dr. Frankwood E. Williams, medical director, National Committee for Mental Hygiene, lectured in Kansas City, October 23, on "Mental Hygiene and the Day's Work."——Charles-Edward A. Winslow, D.P.H., Yale University, addressed the St. Louis Medical Society, October 20, on "Social Hygiene: A Program for Community Health." Dr. James M. Ball, Jr., will address the society, November 3, on "Resurrection Days: An Historical Epitome of Certain Events in Old English Medicine."——Dr. Jonas Curtis Lyter, St. Louis, will address the Kansas City Academy of Medicine, November 27, on "Experimental and Clinical Aspects of Certain Lung Conditions."

NEW YORK

Hospital News.—Work has been started on a new $250,000 preventorium for children on the grounds of the Nassau County Sanatorium, Farmingdale, N. Y. When completed it will accommodate seventy children.——A completely equipped health center for mothers and children was opened at Fulton, Oswego County, October 9, which will be conducted by a committee representing the Fulton Academy of Medicine, the Fulton Health Department and the local child welfare association.

Society News.—Dr. Frank D. Jennings addressed the Society of the County of Queens, September 29, on "Graduate Medical Instruction," and Dr. Walter J. Highman on "Common Sense in the Management of Syphilis."——Dr. Nathan B. Van Etten, president of the Medical Society of the State of New York, addressed the eighty-first regular meeting of the Associated Physicians of Long Island, October 13.——Dr. Ignatius L. Stein assumed the duties of president of the Long Island City Medical Society at the meeting, October 8; Dr. William J. Lavelle was elected vice president, and Dr. Mandel H. Weinstein, secretary-treasurer, reelected.

New York City

Personal.—Dr. Wendell C. Phillips, New York, president-elect of the American Medical Association, addressed the students' assembly at the Medical College of Virginia, Richmond, October 15.——Dr. John R. Whisenant has been appointed urologist to the Tarrytown Hospital.——Dr. Pierre Janet, Paris, France, was the guest of the Neurological Section of the New York Academy of Medicine and the New York Neurological Society at a tea given in his honor at the academy, October 23.

Gifts to Columbia University.—The president of Columbia University announced, October 11, the receipt of gifts of more than $111,000 to the university, among which were $15,000 from the Borden Company for research in food chemistry and nutrition, $15,000 from the Commonwealth Fund for the psychiatric clinic, and other gifts from the Commonwealth Fund for the maintenance of two fellowships for British students, and to meet the expense of certain researches conducted by the university. There was a gift of $2,500 from Edward D. Faulkner, to be applied toward the cost of research in the department of surgery, and $2,000 from the Eli Lilly Company, Indianapolis, to be applied toward the "pernicious anemia fund" in the department of pathology.

Society News.—Dr. Emil Goetsch addressed the Flatbush Medical Society, October 9, on "The Treatment of Diseases of the Thyroid."——Dr. Joseph C. Bloodgood, Baltimore, will address the Clinical Society of the Hospital for Joint Diseases, October 27, on "The Diagnosis and Treatment of

Lesions of Bone in the Earliest Stages with Special Relation to Biopsy (lantern slide demonstration).——John H. Northrop, Ph.D., of the Rockefeller Institute for Medical Research will deliver the second Harvey Lecture at the New York Academy of Medicine, November 14, 8:30, on "Pepsin and Trypsin."——Dr. Herman Goodman will address the American Society of Medical History, October 30, on "The Historical Aspects of Radium."——Dr. John Shelton Horsley, Richmond, Va., addressed the Medical Society of the County of Kings, Brooklyn, October 20, on "Relation of the Physiology of the Stomach to Gastric Surgery"; Dr. Tasker Howard, on "The Pathologic Physiologic of the Kidney," and Charles Frankenberger, "Our Library—Its Literature and How to Consult It."——Dr. Edward S. Welles, Saranac Lake, will address the society, November 6, on "The Surgical Arrest and Cure of Pulmonary Tuberculosis."

NORTH CAROLINA

Personal.—Dr. Lewis P. McBrayer, Southern Pines, has been elected president of the Southern Tuberculosis Association to succeed Dr. Henry Boswell, Jr., Sanatorium, Miss. ——Dr. Thomas E. Tucker, Dothan, Ala., has been elected health officer of Edgecomb County for the unexpired term of Dr. John S. Hooker, who resigned to resume practice at Farmville.

Millions for New Medical School.—The will of Mr. James B. Duke, who died October 10, provides for a bequest of $10,000,000 to the Duke endowment, in addition to the original endowment of more than $40,000,000 bestowed a few month ago (THE JOURNAL, Dec. 20, 1924, p. 2027). The will provides also that the trustees shall expend not to exceed $4,000,000 of the additional bequest in erecting and equipping at the Duke University, Durham, buildings suitable for a medical school, hospital and nurses' home.

OHIO

Hospital Superintendent Appointed.—Dr. Chester C. Kirk, professor of nervous and mental diseases, University of Arkansas School of Medicine, Little Rock, has been appointed superintendent of the State Institution for Feeble-Minded at Orient. Dr. Kirk formerly was assistant superintendent of the Toledo Hospital, Toledo, and of the Arkansas State Hospital for Nervous Diseases, Little Rock.

Midwifery in Cincinnati.—Only twenty-two midwives are known to the registrar of vital statistics in the city of Cincinnati, and the *Cincinnati Sanitary Bulletin* says that the birth records indicate that eleven have been inactive during the last three years. The remaining eleven midwives attended 247 cases in 1924, or a little less than 3 per cent. of the 8,817 births. Of these eleven midwives six are from Germany, two from Russia, one from Italy, one from Austria and one is native born. All of them but two are more than 50 years of age and have been in practice at least fifteen years. They all hold licenses issued by the Ohio State Board of Medical Registration.

Health Commissioners Conference.—At the sixth annual health commissioners conference, Columbus, recently, a day was devoted to the discussion of milk supplies and recent milk-borne epidemics in Ohio; other sessions considered child health programs; the business standpoint of public health administration; public health publicity and preventoriums. Among the speakers were Dr. Allen W. Freeman; Dr. Charles H. Miner, state health commissioner of Pennsylvania; Dr. Clarence D. Selby, president of the Ohio State Medical Association; Louis I. Dublin, Ph.D., Metropolitan Life Insurance Company, New York; Dr. William T. Henshaw, state commissioner of health of West Virginia; Dr. Arthur T. McCormack, state commissioner of health of Kentucky; Dr. John A. Ferrell, director of the International Health Board, and Surg. Leslie L. Lumsden, U. S. Public Health Service.

PENNSYLVANIA

Hospital News.—The University of Pennsylvania recently sold the Medico-Chirurgical Hospital buildings, Philadelphia, to J. Walter Rosenberg for $800,000.

Personal.—Dr. Charles H. Keene, director of public education in the Pennsylvania Department of Public Education, has resigned to accept the professorship of hygiene and director of physical education at the University of Buffalo.

Society News.—Dr. Theodore Diller addressed the Pittsburgh Academy of Medicine, October 27, on (*a*) "The Meaning of the Term 'Mentally Ill' in the Pennsylvania Law"; (*b*) "The Knowledge of Right and Wrong as the Test of Insanity in Murder Cases"; Dr. Forrest L. Schumacher gave a lantern slide demonstration of roentgen-ray plates (by invitation).

State Medical Election.—At the recent annual meeting, in Harrisburg, of the Medical Society of the State of Pennsylvania, Dr. Ira G. Shoemaker was installed as president; Dr. Harry W. Albertson, Scranton, was made president-elect; Drs. Clarence R. Phillips, Harrisburg, Edgar S. Buyers, Norristown, William E. Delaney, Williamsport, and Thomas L. Williams, Mount Carmel, vice presidents; Dr. Walter F. Donaldson, Pittsburgh, secretary, reelected; Dr. Christian B. Longenecker, Philadelphia, assistant secretary, relected, and Dr. John B. Lowman, Johnstown, treasurer, reelected. The next annual meeting will be in Philadelphia.

Pennsylvania Heart Association.—The first annual meeting of the Pennsylvania Heart Association was held, October 7, at Harrisburg, during the annual meeting of the Pennsylvania State Medical Society. Officers elected for the ensuing year were Dr. Joseph Sailer, Philadelphia, president; Drs. James D. Heard, Pittsburgh, John B. McAlister, Harrisburg, Francis J. Dever, Bethlehem, and Edward W. Bixby, Wilkes-Barre, vice presidents; Dr. John D. McLean, Philadelphia, secretary, and Dr. William S. Bertolet, Reading, treasurer. The Pennsylvania Heart Association was formed to promote the prevention and relief of heart disease throughout the state. There are now two heart associations in Pennsylvania—the Philadelphia Heart Association and the Harrisburg Heart Association—and there are thirty-six clinics throughout the state: Philadelphia, twenty-four; Bethlehem, one; York, one; Clearfield, one; Chester, one; Allentown, one; Johnstown, one, and Pittsburgh, six.

Philadelphia

Society News.—Dr. Nathaniel W. Winkelman addressed the Philadelphia Neurological Society, October 23, on "The Newer Staining Methods as Applied to Neuropathology," and Dr. Milton C. Borman on "Carbon Monoxid Poisoning: A Case Showing Mental and Neurologic Changes with Recovery."——At the October meeting of the Academy of Stomatology Dr. Elmer I. McKesson, Toledo, Ohio, held a clinic at the Pennsylvania Hospital. There were other clinics by the members of the dental profession at Evans Institute, and papers were read in the afternoon and evening at the Adelphia Hotel.—Among others, Dr. Stuart Mudd addressed the Physiological Society, Philadelphia, October 19, on "Electrokinetic Behavior of Mammalian Serous Membranes." ——The November meeting of the Obstetrical Society of Philadelphia will be a joint meeting with the Philadelphia Pediatric Society, November 10.

OREGON

Personal.—The dean of the University of Oregon Medical School, Portland, announces that Mr. Ralph Couch has been appointed secretary of the medical school to succeed Mr. Charles N. Reynolds, who goes to Stanford University as an instructor.

Society News.—The eight-story Medical Arts Building, at Tenth and Taylor streets, Portland, will be ready for occupancy in November; it is reported that more than half of the offices has been leased. The building is for the use of physicians and dentists.

Military Committee Recommendation.—The military committee of the Oregon State Medical Society, at the recent annual meeting at Medford, recommended that each county society and each component society of the state set aside one regular meeting each year as a Medicomilitary Night in order that the means of preventing disease and caring for the sick as practiced in the army may be given to the profession in general.

TENNESSEE

New Health Units.—The county courts of Dyer and Weakley counties have voted in favor of establishing full-time county health units. The Dyer County unit will be established, Jan. 1, 1926.

Personal.—Dr. Alfred B. DeLoach, Memphis, has been reappointed a member of the state board of medical examiners.——Dr. Herbert Acuff, Knoxville, was reelected president of the Tennessee Antituberculosis Association at the annual meeting, October 14.

Society News.—The Memphis Urological Society appointed a special committee recently to consult with the Memphis

hospitals regarding the installation of equipment for urologic work, which reported to the society that no hospital in the city at present accepting private patients has a cystoscopic room with the equipment that one would reasonably expect to find in a modern institution. The committee also recommended certain things which each hospital should provide for carrying on urologic work. The report was signed by Drs. Thomas D. Moore and Marcus G. Spingarn.——Dr. Thomas N. Coppedge will address the Memphis and Shelby County Medical Society, November 3, on "Pott's Fracture and Its Treatment." Dr. William R. Blue addressed the society, October 20, on "Diabetes in Children."——At a joint meeting of the Southern Tuberculosis and Southern Sanatorium Associations, Memphis, October 14-16, Dr. Alfred Henry, Indianapolis, spoke on "The Follow-Up Work in Treatment of Ex-Sanatorium Patients"; Dr. John Stewart, Booneville, Ark., "The Sanatorium's Opportunity as a Teaching Agency," and Dr. James A. Price, Oakville, "Ways and Means of Securing Early Cases." There was a barbecue at the Oakville Sanatorium Friday and a general invitation extended to the public meeting that evening to hear the report of Dr. Haven Emerson on the Hospital and Health Survey of Memphis and Shelby County.——The Tri-State Medical Association will meet in Memphis, January 26-28, 1926.

TEXAS

Charges Against Ten Chiropractors.—Charges were filed, October 6, in Dallas County courts against ten chiropractors of Dallas who, it was reported, violated the state medical practice act in that they publicly professed to be physicians and surgeons and offered to treat disease without having first obtained a license from an authorized state board of medical examiners.

VERMONT

State Medical Election.—The Vermont State Medical Society announces that the officers for 1926-1927 are Dr. Edward A. Tobin, Bennington, president; Dr. Thomas S. Brown, Burlington, vice president; Dr. William G. Ricker, St. Johnsbury, secretary; Dr. David Marvin, Essex Junction, treasurer; delegate to the American Medical Association, Dr. Ricker; alternate, Dr. Clarence H. Beecher, Burlington.

VIRGINIA

State Medical Election.—At the annual meeting of the Medical Society of Virginia, Richmond, October 13-16, Dr. William L. Harris, Norfolk, was elected president; Drs. Thomas D. Jones, Richmond, George J. Tompkins, Lynchburg, and Alexander M. Showalter, Christiansburg, vice presidents, and Miss Agnes V. Edwards, Richmond, secretary-treasurer.

Dr. Knott Succeeds Dr. Levy.—Dr. Arthur D. Knott has accepted the position of acting professor of preventive medicine at the Medical College of Virginia, Richmond, to take the place of Dr. Ernest C. Levy, who is on indefinite leave of absence. Dr. Knott received his degree of Doctor of Public Health from Johns Hopkins University and for several years was in charge of public health work in Accomac County. Dr. Robert P. Cooke, who has been connected with the Army Remount Station at Front Royal, will succeed Dr. Knott in Accomac County.

Personal.—Dr. Charles H. Moncure has been elected health officer of Orange.——Dr. William H. Parker has resigned as a member of the school board of Richmond, having moved from the district from which he was appointed.——Dr. Joseph A. McGuire, Norton, has been appointed a member of the state board of health for the unexpired term of the late Dr. Henry M. Miles.——D. B. Lepper, health officer of the Isle of Wight County, has been transferred to Sussex Court House in charge of health work in that county, and Dr. Goldsborough Foard McGinnis will have charge in Isle of Wight County.

Pediatrics at the University of Virginia.—A new clinic building has been opened at the University of Virginia Hospital, Charlottesville. A General Child Welfare Clinic will be conducted, for which funds have been secured through the Commonwealth Fund, New York, from private contributions, and the women of the University Hospital League. The aim will be to study child health, first, in the vicinity of the university and to extend the work, ultimately reaching the mountain people in the western part of the state. There will be trained public health pediatric nurses, student nurses and medical students employed in the clinic building and out in the field. Funds for the first three years' work are in hand. The work is under the direction of Dr. Lawrence T. Royster assisted by Dr. William W. Waddell, Jr.

CANADA

Sir Henry Gray Resigns.—According to the *British Medical Journal*, Sir Henry Gray has resigned as surgeon-in-chief of the Royal Victoria Hospital, Montreal, and as lecturer in clinical surgery at McGill University; when appointed to these positions two years ago, he was surgeon to the Aberdeen Royal Infirmary and previous to that was consulting surgeon with the British army in France.

GENERAL

Personal.—Dr. H. Allasys, Antwerp, Belgium, and Dr. Chompret, St. Louis Hospital, Paris, secretary and president, respectively, of the International Stomatological Association, were elected honorary members of the American Stomatological Association at the meeting in New York, October 15. It was due to the efforts of Allasys and Chompret that the American Stomatological Association received recognition on the occasion of the recent visit to Europe of the American Stomatological Committee.

New Name for Inter-State Postgraduate Assembly.—Dr. Carl Larsen, St. Paul, was elected president-elect of the Inter-State Postgraduate Assembly at the annual convention in St. Paul, October 16. Drs. William J. Mayo and Charles H. Mayo, Rochester, Minn., remain as presidents of clinics, and Dr. William B. Peck, Freeport, Ill., as managing director of the assembly, which hereafter will be known as the Interstate Postgraduate Association of North America instead of the Inter-State Postgraduate Assembly of America.

Diseases Under Investigation.—The Hospital of the Rockefeller Institute for Medical Research, New York, announces the diseases that are under investigation at that institution at present. Physicians may communicate with the hospital by telephone or personal application to the resident physician concerning the admission of patients suffering from (1) nephritis; (2) chickenpox; (3) acute pulmonary infections, including acute lobar pneumonia; (4) rheumatic fever, and (5) cardiac diseases. Patients suitable for these studies will be admitted to the extent of the hospital facilities.

Permits for Tax-Free Alcohol.—Physicians who have permits to procure tax-free alcohol issued prior to August 31, and who desire to carry over tax-free alcohol secured during the present year, must file applications for renewal permits on or before December 31 with the Collector of Internal Revenue having jurisdiction. Tax-free alcohol may be withdrawn for the use of any scientific university or college of learning, any laboratory for use exclusively in scientific research, and for use in any hospital or sanatorium. New bonds are not required with renewal applications when the bonds previously filed are sufficient to cover the needs of the applicants, and the security they afford has not been impaired in any way.

American Hospital Association.—The twenty-seventh annual convention of the American Hospital Association was held in Louisville, Ky., October 19-24. There were more than 2,000 delegates in attendance and about 3,000 other persons interested in hospitals. The association has established a personnel bureau to assist hospitals in securing qualified personnel, and has adopted a set of standards for outpatient departments of hospitals; a set of principles governing the admission to membership; established a legislative reference bureau, and adopted a curriculum for the university training of hospital executives. "Essentials in a Hospital Approved for Interns," prepared by the Council on Medical Education and Hospitals of the American Medical Association, was accepted as governing the intern, or fifth, year in medicine. As to what practitioners shall be allowed to use the hospital, the association ruled that "the members of the staff and all physicians granted the privileges of the hospital should be reputable practitioners of medicine who hold the degree of Doctor of Medicine and of unquestioned moral and professional integrity. A hospital admitting any of the so-called cults to practice under the corporate name of the hospital is not admissible to membership." The association voted to purchase a building at 18-22 East Division Street, Chicago, and the headquarters will move to the new location, June 30, 1926.

Southern Medical Association.—The nineteenth annual meeting of this association will be at Dallas, Texas, November 9-12. There will be all day clinics at the leading hospitals the first day and in the evening the first general session,

at which the presidential address and the orations in medicine and surgery will be given. Three prominent surgeons will deliver addresses at the second general session, Tuesday evening. The section meetings will begin Tuesday morning. Following the general session, Tuesday evening, will be the president's reception and grand ball. There will be a golf tournament, and special trophies as well as the *Washington Post* trophy, which is offered each year, will be awarded. The meetings will be in the First Baptist Church; the hotel headquarters will be at the Adolphus Hotel. The Texas State Pediatric Society will hold an all day clinical meeting at Stoneleigh Court, November 9. Among many other scientific features will be a symposium on cancer, November 11, at a joint session of the sections on surgery and pathology, and a symposium on diabetes, November 12, at a joint session of the sections on medicine and pathology. The Southern States Association of Railway Surgeons, an auxiliary organization, will conduct a symposium on fractures, November 10, at a joint session of the sections on bone and joint surgery. The National Malaria Committee will meet, November 10-11. Among others, Dr. Oliver S. Ormsby will address the section on dermatology and syphilology, November 9, on "Anaphylaxis and Allergy in Dermatology."

Institutions Devoted to Cancer Research.—The director of the American Society for the Control of Cancer notes that the following research institutions, among others, are adding to the scientific knowledge as to the cause, prevention and cure of cancer: Institute of Cancer Research of Columbia University; the State Institute for the Study of Malignant Disease at Buffalo; the Cancer Commission of Harvard University; the Imperial Cancer Research Fund of England, and hospital and research organizations such as the Collis P. Huntington Memorial Hospital, Boston; the Memorial Hospital, the New York Skin and Cancer Hospital and the New York City Cancer Institute, in New York City; the Barnard Free Skin and Cancer Hospital, St. Louis; the Albert Steiner Ward for Cancer and Allied Diseases, Atlanta; the George Chase Christian Hospital and Clinic, University of Minnesota, Minneapolis; the American Oncologic Hospital, Philadelphia; the Pennsylvania Cancer Commission; the Middlesex Hospital in England, and others. In addition, there is the American Association for Cancer Research, established in 1907, with a membership of 148, whose researches are published in the *Journal of Cancer Research*, and the American Society for the Control of Cancer, established twelve years ago, to carry on a campaign of education as a means of using the existing knowledge of cancer to the fullest extent; about 25,000 volunteer workers engage during the year in this educational work of instructing the public by lectures, newspapers, radio and other means of publicity. The society's headquarters are at 370 Seventh Avenue, New York, where inquiries on all aspects of cancer will be answered.

Society News.—At the recent annual meeting of the American Academy of Ophthalmology and Otolaryngology, Chicago, Dr. Edward C. Ellett, Memphis, Tenn., was installed as president; Dr. Ross H. Skillern, Philadelphia, was made president-elect; Drs. Austin A. Hayden, Chicago, William C. Finnoff, Denver, and George L. Tobey, Jr., Boston, vice presidents; Dr. Luther G. Peter, Philadelphia, secretary, and Dr. Secord H. Large, Cleveland, treasurer. The next meeting will be at Colorado Springs, September, 1926.——Dr. Walter G. Alexander, Orange, N. J., was installed as president of the National Medical Association at the recent annual meeting in Chicago, and Dr. Carl G. Roberts, Chicago, made president-elect; Dr. Joseph J. France, Portsmouth, Va., J. H. Terrell, D.D.S., West Palm Beach, Fla., and J. A. McFall, Phar.D., Charleston, S. C., vice presidents; Dr. Clyde Donnell, Durham, N. C., general secretary, and Dr. J. R. Levy, Florence, S. C., treasurer. The next annual meeting will be at Philadelphia, August 24-27, 1926.——At the fifty-fourth annual meeting of the American Public Health Association, St. Louis, October 19-20, Charles-Edward A. Winslow, Dr.P.H., professor of public health and hygiene, Yale University School of Medicine, New Haven, Conn., was elected president; Drs. John A. Amyot, Ottawa, Canada, Max C. Starkloff, St. Louis, and Albert J. Chesley, Minneapolis, vice presidents, and Louis I. Dublin, Ph.D., New York, treasurer. The next meeting will be in Buffalo.——The American Congress of Internal Medicine will be held at Detroit and Ann Arbor, Feb. 22-26, 1926. There will be clinics, addresses and demonstrations at Detroit on all of these days, and clinics, addresses and demonstrations at the University of Michigan, Ann Arbor, February 25. The hotel headquarters will be at the Book-Cadillac, Detroit. Information may be obtained from Dr. Frank Smithies, Secretary-General, 1002 North Dearborn Street, Chicago.——Dr. Frank H. Walke, Shreveport, La., was elected president of the American Association of Railway Surgeons at the recent annual meeting in Chicago, October 21-23; Drs. Don W. Deal, Springfield, Ill., Ebenezer P. Clapper, Waynoka, Okla., and Prince E. Sawyer, Sioux City, Iowa, vice presidents; Dr Frederick G. Dyas, Chicago, treasurer (reelected), and Dr. Louis J. Mitchell, Chicago, secretary-editor (reelected).

FOREIGN

Foundation of Banti Prize by Argentine Physicians.—The *Policlinico* states that the sum of 50,000 liras has been presented to the medical faculty at Florence by physicians in Argentina to found the Guido Banti prize. The income from the endowment is to be awarded for the best original Italian work on pathologic anatomy.

New Hospitals in Tokyo.—The city of Tokyo, Japan, has decided to construct six new hospitals at a total cost of 5,380,000 yen, one of which will be for the exclusive treatment of laborers and others living in the slum districts. The first of this group will be constructed in Azabu, the second in Okubo, a suburb of Tokyo, both of which and three others will be finished by the end of 1926. The buildings will be of reinforced concrete, three stories high.

Personal.—A chair of epidemiology has been created at the Collège de France at Paris and Prof. H. Vincent appointed to it. This is regarded as a national honor for Dr. Vincent, who was médecin inspecteur général of the French army until his retirement on reaching the age limit.——Professor Jude of the military medical school at Paris has been appointed to the chair of nervous and mental diseases in the new Syrian medical school at Damascus. The dean of this school, Dr. Riza Said, and nearly all the other members of the faculty studied medicine in France.——The medals awarded to Profs. Heitz-Boyer, Pasteur Vallery-Radot and Mathé, Paris, by the Cuban Academy of Sciences were presented to them recently by Prof. M. Fernández, president of the academy, at a banquet at the Paris-Latin America Club.——Dr. G. F. Fuse, professor of anatomy, Tohoku Imperial Medical College, Sendai, has been appointed dean to succeed Dr. K. Awoki.——Dr. T. Satow, health officer in the Home Department, was the Japanese delegate to the International Malaria Conference at Rome in October.——Dr. Alfred Kassel was given the Croix de Guerre recently in appreciation of his evacuation of the wounded under heavy fire in the Morocco campaign. He is the first Morocco physician to be given a decoration.——Dr. Ammerling, who is one of a group of 100 Czechoslovakian physicians on a tour of western Europe, spoke at the Collège de France, Paris, on "Purkinje, the Founder of Czech Medicine."——Dr. Rouhet has been a leader in physical training in France for forty years, and the community of Roquebrunè recently placed a commemorative tablet on his residence. He was given at the same time a plaque presented by the World Federation for Physical Training, and the gold medal of the French Société d'encouragement à l'amélioration de la race." His training of the educated stallion Germinal attracted attention several years ago.

CORRECTION

"New Home for New York Academy of Medicine."—In THE JOURNAL, October 17, appeared a statement relative to the new home of the New York Academy of Medicine, saying that its public medical library is the only one in New York. Mr. Charles Frankenberger, librarian of the Medical Society of the County of Kings, writes that this statement is erroneous. Since its consolidation in 1898, New York City has comprised the five boroughs of Manhattan, Brooklyn, Bronx, Queens and Richmond. The Library of the New York Academy of Medicine is not the only public medical library in New York. It is the only public medical library in the Borough of Manhattan. But in the Borough of Brooklyn is the Library of the Medical Society of Kings. This library, established in 1844, is the only public medical library in Brooklyn and on Long Island. It contains 100,000 volumes and receives regularly 1,080 current periodical publications. In size it ranks as the fourth largest medical library in the United States, exclusive of the Surgeon General's Office in Washington. It is housed in a modern library building, owned and maintained by the county society; is open daily and on two evenings each week to the medical and allied professions and to the public for reference, and is in charge of a trained staff of workers.

Government Services

U. S. Public Health Service

P. A. Surg. Marion R. King has been relieved from duty at Hongkong and assigned to the Hygienic Laboratory, Washington, D. C.——Asst. Surg. R. L. Lawrence has been assigned to duty at Manila.——Surg. George W. McCoy has been directed to proceed from St. Louis to Oklahoma City to inspect a laboratory which has applied for a license to manufacture and sell vaccine.

Examination for Public Health Service

Surgeon General Cumming announces that examinations will be held, December 7, in Washington, D. C., Chicago, New Orleans and San Francisco for entrance into the regular corps of the U. S. Public Health Service. Candidates must be not less than 23 nor more than 32 years of age, graduates from a reputable medical college and have had one year's hospital experience or two years in professional practice. There will be oral, written, physical and clinical examinations before a board of medical officers. Permission to take the examination is obtained by addressing the Surgeon General, U. S. Public Health Service, Washington, D. C.

Meeting of Council of Veterans' Bureau

President Coolidge is in favor of establishing in the Veterans' Bureau a medical corps with the same rank, pay and allowances now granted to medical officers in the army and navy, according to an announcement by Frank C. Hines, director of the Veterans' Bureau, at a recent meeting of the medical council of the bureau. General Hines stated that the bureau would request that legislation establishing such a corps be proposed at the next session of Congress. Other speakers at the council meeting included Dr. Ray Lyman Wilbur of Leland Stanford University, chairman of the council, and Dr. E. O. Crossman, medical director of the Veterans' Bureau. Dr. Crossman informed the council of the *Medical Bulletin*, a publication of the bureau started in July, which he said was proving of much value. Medical supervisors, he said, are standardizing both administration and treatment in the Veterans' Bureau hospitals.

Graduation of Field Officers at Carlisle

Graduation exercises were held at the Medical Field Service School, Carlisle Barracks, Pa., October 13, for the class of officers of the medical department, National Guard and Reserve, who completed the field officers' course in this school. The commandant, Lieut.-Col. Charles R. Reynolds, M. C., presented the DeVries medal, which is given to the officer attaining the highest standing in the class, to Lieut.-Col. Roy M. Fortier, Medical Reserve. Lieut.-Col. Joseph C. DeVries, the donor of this medal, is a graduate of the course for national guard and reserve officers of this school. The McCamant medal, given for the highest standing in military hygiene, was presented by Major M. C. Stayer, M. C., director of the department of hygiene, to Major Harold E. Eggers, Medical Reserve. Col. Thomas J. McCamant, Medical Reserve, the donor of the medal, is also a graduate of this school. Diplomas were presented to the following officers:

Col. James E. Daniel, Medical Reserve, Greenville, S. C.
Col. David C. Hilton, M. C., Nebraska National Guard, Lincoln, Neb.
Col. Edward M. Iland, M. C., Pennsylvania National Guard, Coraopolis, Pa.
Col. James H. Ullrich, Medical Reserve, Baltimore.
Lieut.-Col. William G. Noe, Medical Reserve, New York.
Lieut.-Col. Henry W. Cattell, Medical Reserve, Washington, D. C.
Lieut.-Col. Erin E. Epting, Medical Reserve, Anderson, S. C.
Lieut.-Col. Roy M. Fortier, Medical Reserve, Santa Ana, Calif.
Lieut.-Col. William B. Lewis, Medical Reserve, Denver.
Lieut.-Col. Walter F. Schmaltz, Medical Reserve, Dallas, Texas.
Major Harold E. Eggers, Medical Reserve, Omaha.
Major Ralph G. Cressman, Medical Reserve, Hastings, Neb.
Major John F. West, Medical Reserve, Belvidere, Ill.
Major David E. Smallhorst, Medical Reserve, El Paso, Texas.
Major Bernard A. Gallagher, Vet. Reserve, Washington, D. C.
Major Carl W. Lupo, Medical Reserve, Vienna, Ga.
Major Lorenzo O. Smith, M. C., Kentucky National Guard, Harlan, Ky.
Major Ray R. Knight, Medical Reserve, Minneapolis.
Capt. Leland O. Carey, M. C., Iowa National Guard, Des Moines, Iowa.
Capt. Karl H. Metz, Dental Reserve, White Plains, New York.
Capt. William H. Thaler, M. C., Missouri National Guard, St. Louis.
Capt. Henry A. Jasme, V. C., Georgia National Guard, Savannah, Ga.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 17, 1925.

Imperial Social Hygiene Congress

A largely attended congress has been held under the auspices of the British Social Hygiene Council in one of the halls of the British Empire Exhibition at Wembley. It was opened by Mr. L. S. Amery, secretary of state for the colonies, who reviewed the problem of venereal diseases in various parts of the empire. He considered that, under the conditions of modern science, there were no diseases which were more susceptible of being dealt with and cured, if only public opinion was strong enough. Over great parts of the empire the difficulty had been ignorance, indifference and fatalism. At home and in the self-governing dominions, concealment had made it very difficult to deal with the problem, but there had been an enormous change for the better.

VENEREAL DISEASES IN THE SERVICES

Surgeon-Commander T. B. Shaw said that the figures for 1922, in the navy, the latest available, showed that the case ratio per thousand men had fallen from 113 in 1921 to 103.9, and the ratio per thousand sick daily had fallen from 8 to 7.2. A fall in incidence had occurred in all stations except Africa, where the number of cases per thousand was 176.7, as compared with 157.6 in 1921. Although in the China station a considerable fall had taken place, the incidence, 282.3, was still much higher than in any other. The loss to the service from these diseases was, therefore, still very heavy. In the years preceding the Great War, there had been a steady decline in the incidence, but since 1915 venereal diseases had shown a steady increase, associated, no doubt, with a general increase in promiscuous sexual intercourse following a general laxity in sexual relations. He was convinced that promiscuity would continue for some people in spite of all efforts to the contrary. The only hope of eventual extermination of these diseases lay in the wider application of means of disinfection immediately after intercourse. His experience showed that when prophylactic measures were properly used, there was little or no risk of contracting the disease.

Major F. C. Lambkin said that in the army the great advances made in connection with the subject of social influences, especially temperance, played a great part in producing improvement. During the last twenty years, excluding the war period, the incidence of venereal diseases in the army at home steadily declined. In 1904, the admissions were at the rate of 55.8 per thousand men, and in 1922, 25.9. The admissions in garrisons abroad had always been high, owing partly to the lack of provision for regular exercise, partly to the laxity of treatment in small scattered units. In the area of occupation on the Rhine and in Turkey, the problem was difficult; in Cologne alone it was computed that there were 6,000 prostitutes. He emphatically declared, contrary to the view held by some, that the army did not condone or encourage sexual irregularities but did its best to make the conditions for the soldier as alert and invigorating as possible. There should be some organized attempt at prevention by medical means, such as the packet in use in the navy.

Race Problems

At the annual Church Congress, just held, great attention was given to a problem of much wider bearing than the religious one, which of course was mainly in view; namely, the future relation of the white and the colored races. The

Great War has stimulated certain tendencies already existing. In the East the gospel of self-determination has been everywhere eagerly received by the colored races. To the resentment of the colored man at his position of inferiority, and to his determination that the democratic ideals of the Allies should be of universal application, there has been added the belief that the moral basis of Eastern life is in many ways higher and nobler than that of the West. The war has done more than anything else to rouse the people of India to a sense of nationhood and to an intense desire to have more control of their affairs. In opening a discussion on the subject, Lord Willingdon said that there was only one solution to the problem. The white races must realize the necessity of treating all colored men in a spirit of absolute equality, and give up the attitude of color superiority. Providence had long years ago placed the white man in the position of a trustee, whose wards, the colored men, were rapidly growing up. The white man no longer dominated them even for their own good. At best he could tactfully guide them past particular dangers. He had now to meet on terms of absolute equality those whom he had previously regarded as inferiors.

Mr. J. H. Oldham said that perhaps the most fundamental cause of friction and conflict between races was not so much racial as economic. The exclusive immigration policies of the United States and the British dominions, which had produced tension between Western and Oriental peoples, were due, in part at least, to the fear that the standards of living might be affected by the admission of cheap labor. The relations between the white and the black races were largely influenced by the fact that the whites were almost everywhere the employers and the blacks the employed. The problem was essentially economic, though made more difficult by racial differences. In the case of the Eastern races, differences of civilization, which in turn depended on historical experiences, complicated the question. The race problem, to the minds of the colored peoples, resolved itself largely into a claim for equality. The sting of the exclusion of oriental immigration from Western countries lay not so much in the fact of restriction as in discrimination. Many voices called today in all sorts of ways for a solid white front against the colored races. But a solid white front meant a solid yellow front, a solid black front and so on, which in turn meant war. The only way to avoid this disaster was to put the claims of humanity and justice higher than those of race, and in this the lead should be given by the Christian churches.

Ultraviolet Rays for Monkeys

Light therapy has attained a considerable vogue in this country and its use has now been extended to animals. Now that the autumnal fogs are cutting off the sunlight a new departure in the care of monkeys, which is being carried out at the Zoological Gardens, London, has been advanced a stage farther by providing two batteries of powerful electric light in quartz globes, which do not shut off the ultraviolet rays. One battery of three lights is in the open air under a veranda roof; the other is inside the monkey house, placed above the highest perches, with a reflector which throws down the beams, but which is protected from the monkeys by wire netting. At present the monkeys are given an exposure of only a quarter of an hour at a time, once or twice a day, according to the weather. When the light was first turned on, it was interesting to see how the African monkeys and the little American marmosets discovered it at once. They rushed toward the light and sat immediately under it, stretching their limbs and turning themselves round and round, so as to expose their bodies thoroughly to the radiant light and heat. In the case of the lion house also, a move has been made in the direction of more light. The area of the roof lights is being more than doubled, and instead of ordinary glass, "vita-glass," which is transparent to the ultraviolet rays, is being fitted.

Alcoholism as an International Problem

The eleventh Norman Kerr memorial lecture was delivered before the Society for the Study of Inebriety by Dr. R. Hercod, director of the International Bureau against Alcoholism, Lausanne, Switzerland, who took for his subject, "Alcoholism, an International Problem." He said that the question of the supply of alcoholic beverages had become a very important international problem from the economic point of view. The widespread ramifications of the traffic in alcohol and its increasing production had produced a tendency of the liquor trade in a country not only to oppose what was done there to diminish the use of alcohol, but also to try to introduce alcoholic beverages into countries where their use was hitherto unknown. Africa was now suffering from a veritable scourge of alcoholism, the outcome of the introduction of European civilization. The same might be said of Moslem countries. Referring to American prohibition, he said that it was a great pity that the authorities of the United States, who, it might be said, were experimenting for the benefit of the whole world, had not thought of organizing a systematic and continuous investigation with regard to the facts of prohibition. With the help of trained investigators and a few hundred thousand dollars, it would have been possible to constitute a good documentation, before which all would have had to incline, on the subject of prohibition. This would have been of the greatest benefit to every country engaged in the fight. Those who were engaged in the fight should aim at creating such public opinion that principles which were ripe for adoption, but not yet recognized, might be introduced into a future code of international law. The facts concerning alcohol could be taught with fruitful results through the means of schools and colleges.

PARIS

(From Our Regular Correspondent)

Oct. 5, 1925.

Lead Poisoning Resulting from the Manufacture of Storage Batteries

Balsac, Lafont and Feil recently published in the *Bulletin médical* the results of an inquiry made to complete their previous investigation of occupational morbidity among workmen employed in the manufacture of accumulators. They found that lead poisoning in workmen so engaged is frequent. They examined fifty workers, two women and forty-eight men. Of the latter, nineteen were Frenchmen and twenty-nine were Moroccans. Only two of the workers were under 20 years of age, while eight were past 40. The stigmas of lead poisoning and of preliminary stages, which the authors studied particularly, are: urticaria, basophilic stippling of red blood cells, nucleated red blood cells, Teleski's sign (extensors of the wrist too weak to raise the hand above an angle of 45 degrees when the forearm is extended), and finally lead colic. For the nineteen Frenchmen and two French women, the findings were: urticaria or wheals, 8 (38 per cent.); red blood cells with granulations, 15 (71 per cent.); nucleated red blood cells, 0; sign of the extensors, 7 (33 per cent.); lead colic, 9 (43 per cent.). For the twenty-nine Moroccans the findings were: wheals, 21 (72 per cent.); red blood cells with granulations, 23 (80 per cent.); nucleated red blood cells, 22 (79 per cent.); sign of the extensors, 14 (49 per cent.); lead colic, 3 (11 per cent.).

It will be seen that workmen employed in the manufacture of accumulators present a very high percentage of stigmas and symptoms of lead poisoning—much higher, namely, than is found in other lead industries. That the stigmas and

symptoms (aside from the lead colic) were more frequent in the Moroccans than in the Frenchmen is presumably because the latter were better able to understand and adopt proper prophylactic measures. The stigmas of lead poisoning are found most frequently among the spreaders and mixers, and this class of workmen should therefore receive special medical supervision. This is compulsory in accumulator factories, as well as in other establishments using large quantities of lead.

Social Workers in Factories

During the war, a group of women established a school to train other women as social workers in factory communities, since the factory manager and directors are too much absorbed in the direction of affairs for such matters. Now many heads of industry see that social supervision has a definite influence on the output of the factory. The social worker guarantees good order and discipline, proper management of the milk-distributing station, the consultation service for nursing mothers, the crèches, the day nursery, the canteen, the rest room, and other enterprises accepted or introduced by the factory management, the value of which depend on the way they are managed. Prepared by her studies in the school for nurses and by long service in the hospital, the social worker cooperates with the medical service in the crusade against infant mortality, tuberculosis, syphilis, cancer and occupational diseases. She visits the families of the women employees, learns their aspirations, assists them socially and trains them in hygiene and right ways of living in general. In former days, the wife of the factory owner did some of this work, but with the growth of the great industries new needs and new problems require better methods. Thus today the charity of olden times has been replaced by a form of social service which endeavors not only to do works of mercy and kindness but also to take a just and comprehensive view of the situation that surrounds factory women and to preserve them in health and strength; and in this way to contribute toward a stronger and healthier stock in the future.

The social worker is familiar with the resources of public and private aid: the legal provisions concerning large families, lying-in women and nursing women, and sees to it that those in her charge get the benefits of these provisions. Her moral influence is great, and the social worker knows also how to make herself beloved.

The training school for these social workers is located in Paris, 43 Rue Pernety (XIV). It is growing steadily under the direction of Dr. Armand-Delille assisted by two women vice presidents and a committee on instruction. The management is as solicitous as to the general character and moral worth of the students as it is in regard to their formal training. Of sixty-seven applicants for admission, only ten were accepted. The school finds places for its graduates, and they are paid by the industries or administrations that employ them. Their initial salary is 8,400 francs.

The careful selection of applicants and the judicious placing of graduates explain the unanimous satisfaction expressed by the establishments that have employed these social workers. There are now 177 social workers in factories and like positions. One of the most distinguished founded the service that provides compensation to injured workmen of the Paris region. Another is a licentiate in law and is administering the affairs of a woman's work colony. Another is in charge of a mutual aid society composed of the employees of one of the large tailoring establishments of Paris. A worker employed by Michelin superintends the hiring of new employees. In a report, she has pointed out how the social worker can assure the recruiting of an efficient, reliable force and good production. One large railway company (La compagnie des chemins de fer d'Orléans) employs eight workers.

ITALY

(From Our Regular Correspondent)

Oct. 8, 1925.

Center for Research on Human Growth and Constitution

Prof. Nicola Pende, rector of the University of Bari, has accepted the chair of clinical medicine at the University of Genoa, where he has founded a new study center or institute. The new institute will take over the guardianship of the growth and the individual constitutional betterment of children and youths from the beginning of school age up to the commencement of military service, at which time physical development is practically completed. Professor Pende induced Senator Gentile, the preceding minister of public instruction, to decree that one of the medical schools should establish a center of research on the morphology, physiology and pathology of physical and mental development in the schools. As the outcome of that decree, we have now the new institute in Genoa. Another decree regulates state aid for mothers during the early childhood of offspring. With these decrees and the recent legislative measures on physical education, the state plans to correct abnormalities of physical and mental development which are wont to appear during the first years of life, and which, if diagnosed in time, are susceptible of great betterment.

The institute planned by Professor Pende will apply to the youth of the land those measures needed to strengthen weak points in their constitutions and to combat disease tendencies, with a resulting maximal benefit to society. The institute will also constitute a center of information in regard to the qualities and capacities of young persons. Herein the state (and likewise large industrialists) will be given better opportunities for selection of persons to fill difficult positions, as in the aviation or the colonial service.

Visit of Foreign Physicians to the Italian Climatic Resorts

One hundred and sixty foreign physicians are participating in a study tour of the climatic resorts and the mineral springs of Italy. The trip was organized by the Ente Nazionale Industrie Turistiche and is conducted by Professor Ruata. During the last few days the physicians have visited San Remo, Ospedaletti Ligure, Bordighera, Nervi, Rapallo and San Margherita Ligure, where they were most cordially received by the sanitarians and the local authorities. The further itinerary will include Viareggio, Leghorn, Montecatini, Bagni di Chianciano, Fiuggi and Rome. The natural beauties, the therapeutic equipment and the sanitary organization of the health resorts visited made a favorable impression on our welcome guests.

The Title of Medical Specialist

The national government proposes to regulate the use of the title of medical specialist and the corresponding professional practice. This problem has occupied Italian sanitarians for a good many years and for a number of months has been the subject of lively discussion in the medical press. The president of the Federazione degli ordini dei medici, at the request of the bureau of public health, has set forth criteria that might be temporarily adopted until the medical faculties could establish state examinations admitting to the title of medical specialist. According to the federation, the practice of the various specialties should be allowed, at present, to the following: department heads of university medical faculties; department chiefs in large hospitals, and those who, for a period of five years, have been known as practicing specialists. Although the latter would require the endorsement of the council of the medical organizations of which they are members before they would be recognized, certain medical organizations refused to approve the proposals

of the federation on the ground that they were too liberal. They asserted that medical and legal agencies desired the title of specialist reserved for those who truly possess a profound knowledge of a branch of medicine. It was also held requisite for securing the title of specialist that a physician confine his practice exclusively to his specialty. The federation suggested also that medical organizations compile a register of specialists.

Historical Data on the Surgery of Varicose Veins

The Società italiana di storia delle scienze mediche e naturali held recently in Venice its third national convention, which was a pronounced success. Professor Giordano, surgeon and historian, commemorated in his address the centenary of Tommaso Rima's theory of the origin of varicose veins and his surgical method of treatment.

The operation for varicose veins has remote Italian traditions. Cicero narrates that Caius Marius submitted to this operation, the incision extending to a point in the foot, which was at that time the usual procedure for the more valorous. Senator Giordano passed in review the subsequent rich literature on treatment of varicose veins. Rima, active surgeon from 1822 to 1843 in the hospital of Venice, was the first to observe that the true cause of the infirmity is the "inverse movement of the blood," which injures the valves or impairs the tunics. On this conception, Rima based his ligation treatment, and the statistics of his operations show good results. Rima's theory and treatment were combated most vigorously, but at last the truth of his assertions was recognized. Others claimed the merit due him, but Senator Giordano defended resolutely the claims of the Venetian surgeon.

Results of the Antimalaria Campaign in Italy

The bureau of public health reports that malaria has been recognized in fifty-two of the sixty-nine provinces of Italy. The following seventeen provinces are thus far exempt: Ancona, Arezzo, Belluno, Brescia, Cuneo, Florence, Forlì, Genoa, Lucca, Macerata, Massa Carrara, Modena, Parma, Pesaro, Urbino, Piacenza, Porto Maurizio and Turin. The fact that a province is included in the malarial zone is no indication of the incidence of the disease but merely indicates the possibility of the inhabitants contracting malaria. Of the fifty-two infected provinces, manifestations are mild in fourteen, and infrequent and restricted to certain localities in a few communes. The larger part of the malarial territory is along the coasts and in the low or medium alluvial valleys of rivers and mountain streams. Railway construction has contributed to the spread of the infection, because, built for the most part before the mode of transmission of malaria was understood, the railways have many level embankments and undrained excavations. In the provinces of Milan, Pavia and Novara, malaria (diffuse but in a mild form) is due to irrigated fields, especially rice fields. In certain localities of Italy, the Anopheles mosquito is found without the presence of malaria; in many other localities, progressive decrease of malaria has been noted.

The crusade against malaria in Italy began with antimalaria legislation in 1900. Since that date, it has been progressively prosecuted by the directors of public health and the responsible ministers. It is based on: (1) state control of the preparation and sale of quinin salts, through which the communes and various corporations are supplied at reasonable prices; (2) compulsory prophylaxis in certain contingencies, and (3) the obligation on estate owners to eliminate ponds and stagnant waters.

The results of the twenty-year campaign against malaria are seen in the statistics. Before the present legislation went into effect, the mortality for malaria reached 15,000 deaths yearly. Since 1903, the mortality had been steadily decreasing, until in 1914 the total number of deaths had reached 2,045. The war brought a marked recrudescence of the disease, the mortality for 1918 having been 11,487, owing to the coincidence with the influenza epidemic. Since 1919, malaria has again been decreasing progressively and has now about reached the prewar basis. In 1923, there were 3,307 deaths from malaria, or eighty-seven per million of population.

BERLIN

(From Our Regular Correspondent)

Oct. 3, 1925.

The Session of the League of German Medical Societies

THE KRANKENKASSEN AND THE MIDDLE CLASSES

Since the war, it has become increasingly difficult for the middle classes to secure the money needed in cases of illness. For that reason, the need of health insurance is being more and more strongly felt. A number of schemes for health insurance for the middle classes have already been launched, such as housewives' mutual benefit organizations, craftsmen's chambers, and other similar societies. In this connection, a general antipathy toward panel physicians has developed, and for this reason an endeavor has been made to abolish everything that is reminiscent of the bureaucracy of the *Krankenkassen* and their compulsory membership. The local *Krankenkassen* under the direction of the social democrats are watching the progress of the new endeavors and combating them when their fear is awakened. The newer organizations seem likely to thwart the social democrats in their plan of gradually extending compulsory health insurance to all classes and thus bringing about the introduction of social medicine by way of the local *Krankenkassen*.

At the recent meeting of the Hartmann League during the annual session of the League of German Medical Societies, one of the speakers presented the following points: In 1906, at the regular annual session of the League of German Medical Societies (the so-called *Aerztetag*), held in Halle, the desire of the middle classes for protection against economic losses due to disease and like causes, by means of mutual organization, was recognized by the convention as fully justified. Therefore, under the changed economic conditions of today like endeavors of the middle classes meet with even greater approval of the physicians. Health insurance schemes for the middle classes in the future must not interfere with relations between private patient and physician, and, furthermore, they must provide that membership be limited to the middle classes. The by-laws of such insurance organizations should contain the following fundamental provisions: No contract shall be entered into with physicians or medical organizations for the purpose of determining the conditions on which medical assistance will be rendered. Insured members must not be given either cash or coupons in payment of health insurance claims. Only treatment given by graduate physicians shall be recognized and approved. The insured must himself bear a portion of the fees paid for medical attendance and any other expenses connected with the illness. Representatives of the medical societies should collaborate in the organization of health insurance systems. Health insurance societies that comply with these fundamental requirements will promote the interests of the medical profession and the public health and will combat quackery. They will also prevent extension of federal compulsory health insurance and the growth of bureaucracy in the medical profession. Medical organizations as well as individual physicians will support the new idea. Another speaker on this topic took an unfavorable attitude toward mutual societies for the benefit of the middle classes, whereupon the convention appointed a committee to inquire further into the subject and submit a report.

PROPOSED REGULATIONS FOR MEMBERSHIP IN THE PANEL OF HEALTH INSURANCE PHYSICIANS

Dr. Hadrich discussed the proposed new regulations for acquiring membership in the panel of health insurance physicians, the so-called *ärztliche Planwirtschaft*. The three main provisions of the proposed plan are: (1) a uniform distribution of applicants throughout Germany by announcement of vacancies in the panel and the issuance of warnings against physicians locating in overcrowded districts; (2) pensioning of panel physicians who have reached the age of 70 or who have previously become incapacitated, and (3) constant observation of the labor market so as to have the supply of physicians in a given region correspond to the demand. In the uniform distribution of panel physicians, the numbers of the insured and their families, together with the social and economic organization of the whole population, must be considered. In sending panel physicians to thinly populated or poverty stricken districts, the state or the communal league should subsidize physicians sufficiently to insure them an income commensurate with their profession. The following proposals are made to solve the problems of the transition period: All physicians who, after Oct. 1, 1925, shall be admitted to panel practice shall aid the Hartmann League and the leagues of the *Krankenkassen*, to raise the funds necessary for the support of physicians whose advancing age or physical incapacity compels them to retire. All newly admitted panel physicians shall pay a certain percentage of their incomes (about 10 per cent., possibly) for this purpose, due account being taken of their own needs. Pressure must not be exerted either to induce an applicant for panel practice to accept a place offered him or to persuade elderly physicians to resign. No pensioned physician may continue in panel practice. In order to correlate supply and demand for physicians and to regulate the number of students taking up the study of medicine, the subcommittee of the *Planwirtschaft* must establish the number and the age of the physicians engaged in panel practice. The probable number of panel physicians that will be needed for the next few years, on the basis of the figures thus collected, should be published through the press, the academic bureaus of information and the heads of higher institutions of learning. If the number of medical students does not diminish in accordance with prospective needs, admissions to the study of medicine at the universities should be restricted for a time.

RELATION OF THE PHYSICIANS TO THE KRANKENKASSEN

The relations of the physicians to the *Krankenkassen* took up much of the time devoted to discussion. In their journals the representatives of the *Krankenkassen* admit, to be sure, that the present physicians' fees are not commensurate with the advance in prices of commodities, but they emphasize that the high prices in themselves cause an increased incidence of disease, which, in turn, increases the demand for physicians and thus enhances their incomes. This seems to be a very peculiar point of view to take. It overlooks also the fact that, in many places—for example, in Berlin—panel physicians receive per capita fees, and thus do not get a penny more for their additional work. Some instructive statistics were presented by Dr. Hadrich. In 1914, only 27 per cent. of the *Krankenkassen* provided for the insurance of families of the insured; in 1924, 89.25 per cent. had adopted this policy. Since the number of persons insured in the *Krankenkassen* has increased in proportion to the population, there remains a much smaller percentage of the population from which physicians may get private patients. Dr. Hadrich showed also that the Prussian minister of public welfare was more obliging to *Krankenkassen* officials as regards advances in salary than he was to the physicians with respect to their fees. According to a decree of the minister, dated November, 1924, the salary group classification of *Krankenkassen* officials should have been revised. March 21, 1925, the Prussian minister of public welfare ordered the revision not to be made. As a consequence, 3,625 officials are still classified in Groups 7 and 8, whereas only 659 should be so classified. Similarly, there are thirty-seven officials classified in Groups 12 and 13, in place of eleven really entitled to such classification. It is therefore all the more surprising that the *Krankenkassen* should endeavor to prove that physicians have greater incomes now than they had during the war period. In the statistics of a journal of the *Krankenkassen* it is stated that, as against a fee of 6.39 marks in 1913, the fee for a panel physician in 1924 had been advanced to 12.64 marks. Nothing is said, however, of the great increase of family insurance. Then, too, the *Krankenkassen* have the habit of regarding expenditures for assistants, and things of like nature, as physicians' fees. If all these facts are considered, the fees for 1924 are in reality lower than before the war. How unfavorably the abolition of the free choice of physicians has affected the local distribution of physicians may be distinctly seen in mining and industrial regions. Whereas in Berlin there are 764 inhabitants to one physician, in Stuttgart 913, and in Elberfeld 966, in Essen there are 2,101, in Duisburg 2,267 and in Hamborn 2,749.

PRAGUE

(From Our Regular Correspondent)

Oct. 1, 1925.

Decline in Birth Rate

In a recent discussion in the Czechoslovak parliament, the minister of health, Mr. J. Sramek, called attention to the declining birth rate of Czechoslovakia, and to the measures by which he intends to stop the decrease. The highest national birth rate was that of 1870. The war brought about a real drop, which was succeeded by a rapid but temporary increase, and this, in turn, by a decline below the prewar level. Prague shows the most rapid decline of all, with a decrease of 29 per cent. in the last quarter century. The danger is most acute in the highly developed and thickly populated western provinces, while the eastern provinces show a comparatively high birth rate. The result of these conditions is that the population in the industrial western centers is gradually being replaced by those coming from the eastern provinces. The causes for the decline have their roots in both social and public health conditions. Venereal diseases, housing shortage, contraception and induced abortion each has contributed to the result. Attempts to enact legislation allowing, in selected cases, induced abortion for social reasons have helped to spread the practice. The minister does not expect great results from educational campaigns for bigger families but hopes to attain the same end by promotion of hygienic and social protection of the child. The campaign against preventable diseases should both increase fertility and reduce the death rate.

Legislation on Prostitution

Recent articles in several daily papers maintain that the law of 1921 abolishing control of prostitution resulted in an increase of venereal diseases. This legislation was put through owing largely to the activities of the Czech Association for Combating Venereal Diseases, and Prof. F. Samberger, president of the association, has published a defense of its action. The contention that there has been an increase of incidence of venereal diseases is not supported by facts. On the contrary, venereal disease in the army shows a rapid decline. The figures representing the occurrence of venereal infection among drafted men can be taken as an index of its occurrence in the civilian population, and these figures become more favorable every year. Deductions from the number of patients applying to private physicians are valueless. Prostitution

conditions are not ideal, but the blame is to be put on the police, who do not favor the new law and are remiss in cooperation. While the brothels have been abolished, the prostitutes frequent the numerous bars and dance halls which have sprung up. In order to raise public discussion about prostitution to a higher level, the Association for the Combating of Venereal Diseases published, in the Czech language, Dr. Abraham Flexner's book on Prostitution in Europe. It was largely due to this book, says Dr. K. Ulryeh, its translator, that the legislation abolishing control of prostitution was introduced in Czechoslovakia. It is unfair to pass judgment on the effects of the law for several reasons: The time that has elapsed since its promulgation is too short; its positive aspects, especially free obligatory treatment, have been hindered by limitation of public funds and difficulties of organization. The minister of health recently declared the intention of the ministry to investigate the incidence of venereal disease, as it was done in 1921. At that time, for a period of one month, all cases of venereal disease were reported without giving the name of the patient. The ministry plans to repeat this once in five years. The next period of reporting will occur next February.

Memorial to Dr. Albert

Recent numbers of Czech medical periodicals contained memorials of the Czech surgeon Dr. Eduard Albert, the twenty-fifth anniversary of whose death occurred, September 25. Dr. Albert was born in the small town of Zamberk, Bohemia, in 1841. He studied medicine in Vienna, and after his graduation remained in the Vienna medical school. He, together with other Czechs, including Rokitansky and Skoda, have contributed considerably to the glory of the Vienna Medical School. From 1888 to his death he was professor of surgery in Vienna. His well known studies on the surgery of the bones and joints are the fundamentals of modern orthopedics. He was unquestionably one of the greatest teachers of medicine in the last century. Although he spent his whole life in the German environment of Vienna he never severed his connections with his nation. He printed many of his publications in Czech medical periodicals and participated in Czech scientific meetings. His pupils can be found not only among the Czech surgeons, such as Mydl and Bakes, but also among those connected with Vienna University, among whom are Hochenegg, Ewald, Lorenz, Schnitzler and Friedlaender.

Antituberculosis Activities

Several new antituberculosis activities can be reported from Czechoslovakia. The present tuberculosis legislation is out of date and does not afford to the health officials sufficient authority over reluctant patients. A joint committee, recruited from various organizations, recently discussed the measures that should be incorporated in a new law. Some, fearful of expense, recommended a law that should compel only notification of tuberculosis cases, tuberculosis deaths, and prescribe disinfection after the death, or change of living quarters of tuberculous persons. Others, with the revenue from social insurance in mind, advocated, in addition, the erection of pavilions for incurables, erection of sanatoriums, payment of fees in tuberculosis institutions from public funds, and erection of dispensaries. In the end, the second schedule was recommended. Another novelty in Czechoslovakia is the initiation in the sanatoriums of the High Tatras of postgraduate courses in tuberculosis along the lines of those given at Davos or Saranac Lake. The courses were organized under the auspices of the Tatra section of the Czechoslovak Association for the Study of Tuberculosis. The High Tatras in Slovakia is developing into an important region for the treatment of tuberculosis, and a group of sanatoriums, both public and private, is located there.

Marriages

DEANE ROCKHOLD BRENGLE, Detroit, to Miss Hazel Mildred McClay of Bowling Green, Ohio, at Wayne, Mich., October 8.

JOSIAH BENJAMIN HIBBITTS, JR., Nashville, Tenn., to Miss Miriam Burkloe Brown of Baltimore, September 29.

SAMUEL FITZSIMMONS RAVENEL, Charleston, S. C., to Miss Katherine Parr Brown of Baltimore, September 29.

LOUIS ARIEL SCHULTZ, New York, to Miss Mary Mathilda Wimenitz of Philadelphia, August 16.

LEWIS BAER FLINN, Baltimore, to Miss Elizabeth Winchester Waters of Elkridge, October 3.

MILTON H. ALEXANDER to Miss Sophie Beatrice Smith, both of New York, October 6.

HARVEY P. CHARLES to Miss Helen Scott Kay, both of Berkeley, Calif., September 3.

MORRIS AARON GOLDBERGER to DR. GERTRUDE FELSHIN, both of New York, September 18.

JOHN H. KARSTEN to Miss Catherine Clausen, both of Horicon, Wis., October 17.

POWELL G. FOX, Raleigh, N. C., to Miss Shirley Kingsbury of Scranton, Pa., June 20.

Deaths

John Henry Wallace Rhein ✦ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1890; professor of neurology, Graduate School of Medicine of the University of Pennsylvania; member of the American Neurological Association, the Philadelphia Pediatric Society, the Philadelphia Neurological Society, the Philadelphia Psychiatric Society, the American Psychiatric Association, the Association for Research in Nervous and Mental Diseases and the Philadelphia Pathological Society; served in the M. C., U. S. Army, during the World War; formerly on the staffs of the Howard, Philadelphia General, Philadelphia Orthopedic and St. Agnes' hospitals and the Philadelphia Home for Incurables; aged 56; died suddenly, October 14.

Henry Clinton Eyman, Massillon, Ohio; Columbus Medical College, 1880; member of the Ohio State Medical Association, and the American Psychiatric Association (president 1919-1920); past president of the American Medico-Psychological Association; professor of nervous and mental diseases, University of Wooster Medical Department, Cleveland, 1891-1905; assistant physician to the Athens State Hospital, 1884-1887; assistant superintendent Toledo State Hospital, 1887-1891; superintendent of the Cleveland State Hospital, 1891-1899, and of the Massillon State Hospital, 1899-1918; aged 69; died, October 7, of cerebral thrombosis.

Edward Wood Walker ✦ Cincinnati; Medical College of Ohio, Cincinnati, 1878; emeritus professor of clinical surgery, University of Cincinnati College of Medicine; member of the American Surgical Association; formerly member of the city board of health; for thrity years on the staff of the Cincinnati General Hospital and at one time on the staff of the German Deaconess Hospital; aged 72; died, October 6.

Marcus Babcock Heyman ✦ New York; Medical Department of the University of the city of New York, 1890; superintendent of Manhattan State Hospital for the Insane, Ward's Island; formerly assistant superintendent of the Central Islip Hospital; member of the American Psychiatric Association; aged 58; died suddenly, October 7, of acute dilatation of the heart.

Jesse McClain ✦ Coshocton, Ohio; University of Illinois College of Medicine, Chicago, 1895; past president of the Coshocton County Medical Society; served in the M. C., U. S. Army, during the World War; for many years a member of the city board of health; aged 57; died recently, of cerebral hemorrhage, following a long illness.

Charles Newton Cox ✦ Brooklyn; University of Pennsylvania School of Medicine, Philadelphia, 1883; past president of the Medical Society of the County of Kings; at various times on the staffs of the Brooklyn Eye and Ear, Bushwick, Bethany-Deaconess' and St. Mary's hospitals; aged 66; died suddenly, October 9, of cerebral hemorrhage.

Joseph Rex Hobensack ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1893; formerly assistant demonstrator and instructor in anatomy at his alma mater; at one time on the staffs of the German and Lankenau hospitals; aged 55; died, October 7, of heart disease.

Ralph O. Dresser ✠ Paso Robles, Calif.; University of California Medical School, San Francisco, 1901; formerly health officer of Paso Robles; aged 49; died, September 29, at the University Hospital, San Francisco, of acute appendicitis.

Julia Morton Plummer, Cambridge, Mass.; Boston University School of Medicine, 1887; for many years on the staff of the Talitha Cumi Maternity Home and Hospital, Boston; died, October 3, following a long illness.

Frank G. Hackleman ✠ Rushville, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1882; member of the Indiana Academy of Ophthalmology and Oto-Laryngology; aged 66; died, October 9, following a long illness.

Henry William Heaton, Providence, R. I.; Columbia University College of Physicians and Surgeons, New York, 1889; aged 59; was found dead in a bayou near Clearwater, Fla., October 7, with a bullet wound in his head.

Jesse Robert Talley, Mountain Grove, Mo.; University of Louisville (Ky.) School of Medicine, 1888; member of the Missouri State Medical Association; aged 64; died, September 9, of chronic appendicitis and peritonitis.

Richard Urquhart Burges, Norfolk, Va.; Medical College of Virginia, Richmond, 1895; member of the Medical Society of Virginia; on the staff of the Norfolk Protestant Hospital; aged 52; died in September.

Willis Dana Storrs ✠ Topeka, Kan.; Kansas Medical College, Topeka, 1895; formerly professor of clinical medicine at his alma mater; aged 55; died, October 5, at Rochester, Minn., of angina pectoris.

Timothy John Bowes, Philadelphia; Jefferson Medical College of Philadelphia, 1891; medical director of the Philadelphia Electric Company since 1907; aged 66; died, October 3, of dilatation of the heart.

Horace M. Lowe, Washington, D. C.; University of Michigan Medical School, Ann Arbor, 1886; served in the U. S. Veterans' Bureau; aged 64; died at the Polyclinic Hospital, New York, October 7.

Patrick H. McGovern ✠ Milwaukee; University of Pennsylvania School of Medicine, Philadelphia, 1894; aged 63; died, September 30, at the Columbia Hospital, Milwaukee, following a long illness.

Emilien Roch, North Grosvenor Dale, Conn.; University of Montreal Medical Faculty, Montréal, Que., Canada, 1890; member of the Connecticut State Medical Society; aged 61; died, October 5.

Hugh Robert Thomas Ross ✠ Ladysmith, Wis.; Trinity Medical College, Toronto, Ont., Canada, 1901; aged 48; died, September 26, at Toronto, Ont., of hypertension and chronic myocarditis.

William Howard Knevitt, Brooklyn; Bellevue Hospital Medical College, New York, 1895; on the staff of the Kings County Hospital; aged 63; died, October 13, following a long illness.

Oliver M. Dodson, Baker, Ore.; Willamette University Medical Department, Salem, 1877; Bellevue Hospital Medical College, New York, 1883; Civil War veteran; aged 82; died, October 2.

Frank P. Nourse ✠ Lewiston, Idaho; Chicago Medical College, 1877; formerly on the staff of St. Joseph's Hospital, where he died, August 30, of uremia, following on operation, aged 73.

John Dade Darby, Oakland, Md.; University of Maryland School of Medicine, Baltimore, 1912; served in the M. C., U. S. Army, during the World War; aged 37; died, October 11.

Jonathan M. Wright, Redlion, Ohio; Medical College of Ohio, Cincinnati, 1869; member of the Ohio State Medical Association; aged 81; died, October 6, of cerebral hemorrhage.

William Kendall Paul, Belmont, N. Y.; Cleveland University of Medicine and Surgery, 1884; member of the Medical Society of the State of New York; aged 64; died, September 5.

George Edward Kincaid, Clinton, Iowa; Barnes Medical College, St. Louis, 1900; member of the Iowa State Medical Society; aged 57; died, October 2, at the Jane Lamb Hospital.

Charles Witt Womack, Lewisburg, Tenn.; Kentucky School of Medicine, Louisville, 1870; member of the Tennessee State Medical Association; aged 87; died, at Nashville, October 1.

William Chambers Phillips ✠ Clarinda, Iowa; University of Illinois College of Medicine, Chicago, 1903; aged 48; died, October 7, in a hospital at Iowa City, of tumor of the brain.

Henry A. King, Bangor, Me.; Medical School of Maine, Portland, 1888; member of the Maine Medical Association; aged 66; died, July 17, at Brewer, of angina pectoris.

Bailey B. Petty ✠ Cynthiana, Ky.; Medical College of Ohio, Cincinnati, 1884; aged 66; died, October 5, at the Good Samaritan Hospital, Cincinnati, following an operation.

William Henry Swisher, Dayton, Ohio; Eclectic Medical Institute, Cincinnati, 1898; formerly coroner of Montgomery County; aged 50; died, October 3, of heart disease.

John Henry Carty, Fair Haven, Vt.; University of Michigan Medical School, Ann Arbor, 1882; member of the Vermont State Medical Society; aged 61; died recently.

Eddie Riley, Mayfield, Ky.; University of Louisville School of Medicine, 1912; member of the Kentucky State Medical Association; aged 43; died, October 2, of pellagra.

William French Hazelton ✠ Bellows Falls, Vt.; Medical Department of Columbia College, New York, 1884; aged 65; died, July 23, at the Rockingham Hospital.

Joseph C. Chapman, Wheeler, Ill.; American Medical College, St. Louis, 1879; president of the State Bank of Commerce; aged 70; died, October 9.

George O. Sikes ✠ Cincinnati; Medical College of Ohio, Cincinnati, 1904; on the staff of the Good Samaritan Hospital; aged 53; died, October 8.

John F. Synder, Rockford, Ill.; Rush Medical College, Chicago, 1882; member of the Illinois State Medical Association; aged 65; died, October 6.

William E. Link, Abbeville, S. C.; Medical College of Georgia, Augusta, 1859; veteran of the Civil War; aged 93; died, October 1, of senility.

Elias Franklin Lane, Green City, Mo. (licensed, Missouri, 1884); Civil War veteran; aged 81; died, September 19, following a long illness.

Charles P. Davis ✠ Galena, Ind.; University of Louisville School of Medicine, Louisville, 1881; aged 65; died, October 5, of heart disease.

James Wilmer Strong, Philadelphia; Hahnemann Medical College of Philadelphia, 1879; Civil War veteran; aged 84; died, October 8.

James William Mulhern, Des Moines; Marion-Sims College of Medicine, St. Louis, 1892; aged 59; died, October 6, of heart disease.

James Thomas Jenkins ✠ Carthage, Ill.; Missouri Medical College, St. Louis, 1890; aged 57; died, October 9, following a long illness.

Louis Albert Cazenove, Seminary, Va.; University of Virginia Department of Medicine, Charlottesville, 1875; aged 74; died, October 5.

Louis Jurist ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1880; aged 70; died suddenly, October 9, of heart disease.

Louis L. Hertel, Chicago; Kentucky School of Medicine, Louisville, 1893; aged 62; died, October 10, of carcinoma of the rectum.

Frederick Edwards ✠ Cairo, N. Y.; University of Vermont College of Medicine, Burlington, 1875; aged 74; died, August 12.

William L. Carlock, Everton, Mo.; St. Louis Medical College, 1873; aged 72; died, October 10, following a long illness.

John H. Sutherland ✠ St. Albans, W. Va. (licensed, West Virginia, under the Exemption Law); aged 72; died recently.

George W. Marter, Philadelphia; Hahnemann Medical College of Philadelphia, 1878; aged 76; died, September 8.

James Begen, New York; Eclectic Medical College of the City of New York, 1877; aged 75; died, October 7.

George W. Akers, Stafford, Kan.; Indiana Medical College, Indianapolis, 1878; aged 86; died in September.

Ira Norman Zeis ✠ Carey, Ohio; Toledo Medical College, 1894; aged 57; died, October 7, of septicemia.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

DR. TRIPP'S LIQUOR RHEUMATICA

More Quackery in the Rheumatism Cure Field

During the past year an expensive and high-pressure advertising campaign has been made on a nostrum known as "Dr. Tripp's Liquor Rheumatica." The stuff is put out by a concern calling itself the Norwood Pharmaceutical Co. and having the following officers:

DOAK NORWOOD, President.
CLYDE F. LLOYD, Vice-President.
FRANK P. LLOYD, Secretary-Treasurer.

Before putting on the newspaper campaign the concern resorted to the old method of trying to work the medical profession first. Physicians—of Chicago, at least—were circularized and urged to use Liquor Rheumatica in cases of "chronic rheumatism." No detailed information seems ever to have been given regarding the composition of the nostrum. The circular addressed to physicians vaguely mentions potassium iodid, "phytolacca-rheuma"—whatever that may be—cimicifuga and calisaya and cinchona compounds. No quantities are given except of those drugs which the federal law demands, in this instance, alcohol 12 per cent.

Photographic facsimile of a full-page advertisement of "Liquor Rheumatica" that appeared in the Chicago *Tribune*. In the original this measured nearly 1½ ft. by 2 ft.

With the circular letter sent to physicians there was an eight-page leaflet containing four testimonials purporting to be reproduced in facsimile from the originals. Three of these were from laymen. The fourth was on the stationery of and signed by Fred E. Stevens, M.D., 449 Peterboro Street, Detroit, Michigan. It was dated November 15, 1924. For several years past the Directory Department of the American Medical Association has been unable to locate Dr. Fred E. Stevens, and his name in the Directory has appeared, therefore, in the "Address Unknown" list. Neither does his name appear in the Detroit telephone directory.

The files of the Bureau of Investigation reveal an interesting coincidence regarding Fred E. Stevens. Some twelve or fifteen years ago a nostrum known as "Dr. John Tripp's Blood Purifier" was being widely advertised under the claim that it was a positive cure for syphilis as well as for rheumatism and female trouble. At that time the Bureau of Investigation accumulated a complete set of follow-up letters put out by the quacks that were selling this stuff. It was then exploited by Sam J. Davis & Co., Hot Springs, Arkansas. Later the nostrum seemed to be pushed by the John Tripp Remedy Company of Detroit, Michigan, and Buffalo, N. Y. In 1916 a letter was received asking for information about "Tripp's Blood Purifier" and stating that one Dr. Fred E. Stevens of Detroit was connected with the exploitation of the nostrum.

"Dr. John Tripp's Blood Purifier" seems to have been on the market for many years, as we have on file an advertising booklet on this product issued in 1883. At that time the stuff was put out from Buffalo, New York. In July, 1914, the Association's Laboratory reported finding large quantities of potassium iodid with traces of cinchona alkaloids in "Dr. John Tripp's Blood Purifier." These facts should be kept in mind because of what follows.

To revert again to Liquor Rheumatica: This nostrum, after being exploited for a short time to the medical profession, was brought to the attention of the public with a flare of full-page newspaper advertisements in Chicago dailies. One of these, from the Chicago *Tribune*, is reproduced in miniature with this article. The advertisements as well as the circulars sent to the general public stressed the alleged fact that physicians recommended the preparation and published testimonials credited to the medical profession. The full names of the physicians are not published but there are given what purport to be their initials and the cities in which these men live. Some of the testimonials thus published are:

Dr. G. F., Chicago, Ill.	Dr. B. H. D., Owen, Wis.
Dr. C. W. R., Holcombe, Wis.	Dr. L. C. L., Alexandria, Ohio.
Dr. E. T. P., Chicago, Ill.	Dr. S. M. R., Chicago, Ill.
Dr. S. W. R., Grantsville, W. Va.	Dr. J. W. W., Chicago, Ill.
Dr. L. L. A., Wauwatosa, Wis.	Dr. M. C. S., Webster, S. D.
Dr. J. H. J., Anderson, Ind.	Dr. W. H. R., Detroit, Mich.
Dr. P. H. D., Juneau, Wis.	Dr. A. C. K., Chicago, Ill.

As already stated, Liquor Rheumatica (Dr. Tripp) is marketed from Chicago by the Norwood Pharmaceutical Co. The "Medical Director" of the company is one G. E. Fosberg, M.D., whose name has long been in the files of the American Medical Association. His name has also appeared at different times in Chicago newspapers in unsavory connections. Incidentally, Fosberg seems to be connected with what is known as the "Physicians Clinical Laboratory," which is at the same address and has the same telephone number as the Liquor Rheumatica concern.

Some of the claims for Liquor Rheumatica are:

"Now there is given to the world one of the most amazing discoveries ever made by that famous medical scientist, Dr. John Tripp. It is a tried, tested and approved specific for rheumatic conditions and is called Liquor Rheumatica (Dr. Tripp)—not a patent medicine but a prescription of Dr. Tripp's which has stood most exacting tests in cases of arthritis, sciatica, gout, neuritis, myalgia, lumbago and allied conditions."

"Liquor Rheumatica (Dr. Tripp) is foremost a dissolver of poisons and cleanser of the system, loosening up and dissolving the poisonous products stored up in the glands and tissues."

"Try a bottle of Dr. John Tripp's Liquor Rheumatica today—banish rheumatism forever."

"No case is too severe or of too long standing."

"Chronic cases of many years standing, embracing all the known forms of rheumatism, have been conquered by this prescription."

"Liquor Rheumatica, a prescription of the eminent scientist, Dr. Tripp, brings quick permanent relief."

Because of the number of inquiries received regarding this product, one of them coming from as far west as the Pacific Coast, the Association's Laboratory was asked to analyze the nostrum and report its results. The Laboratory report follows:

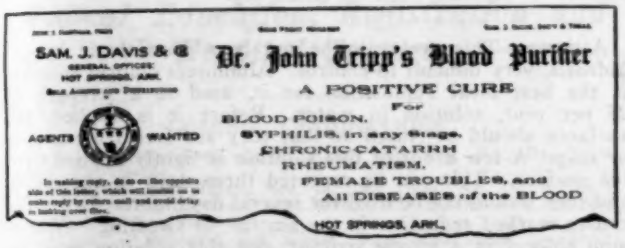
LABORATORY REPORT

"Two original bottles of Dr. Tripp's Liquor Rheumatica (Norwood Pharmaceutical Co., Chicago) were submitted to

the A. M. A. Chemical Laboratory for examination. Each bottle contained 230 c.c. (approximately 7¾ fluidounces) of a liquid, with a red-brown suspension, having an aromatic odor and bitter taste. The color appeared to be due chiefly to suspended matter. On standing for some time most of the suspended matter settled, leaving an almost clear, pale reddish-yellow, supernatant liquid. The reaction was faintly acid to litmus.

"No information concerning the composition of Liquor Rheumatica was given on the label of the product except that which the law requires in connection with the presence of alcohol. The label read: 'Contains not more than 12 per cent. alcohol.' In the advertising formerly sent out by the Norwood Pharmaceutical Company, however, the presence of potassium iodid, calisaya, cinchona, cimicifuga, and 'phytolacca-rheuma' were declared, although no amounts or proportions of the several ingredients were given. As calisaya is a variety of cinchona, only four drugs (in addition to alcohol) were present, according to the claims. 'Phytolacca-rheuma' is not the name of any drug known to scientific medicine. Possibly the name may refer to poke root, *'Phytolacca decandra,'* which was formerly described in the Pharmacopeia of the United States.

"Qualitative tests indicated the presence of alcohol, potassium, trace of sodium, trace of calcium, iodid, small amounts of cinchona alkaloids and vegetable extractive. The suspended matter was for the most part vegetable tissue and an insoluble red-brown amorphous substance. Under the microscope, the residue of vegetable tissue consisted apparently of finely powdered red saunders (*santalum rubrum*) to which substance the suspension owes its color. In fact, the vegetable residue consisted almost entirely of minute fragments of wood fibers with yellow walls; in the slightly larger


SAM. J. DAVIS & CO.
GENERAL OFFICES
HOT SPRINGS, ARK.

Dr. John Tripp's Blood Purifier

A POSITIVE CURE
For
BLOOD POISON,
SYPHILIS, in any Stage,
CHRONIC CATARRH
RHEUMATISM,
FEMALE TROUBLES, and
All DISEASES of the BLOOD

AGENTS WANTED

HOT SPRINGS, ARK.

Photographic facsimile of the letterhead of Sam J. Davis & Co. who in 1911 were exploiting "Dr. John Tripp's Blood Purifier." This product seems to have had essentially the same composition as "Dr. Tripp's Liquor Rheumatica."

masses in which one cell overlaid another, the color was more reddish. There was a trace of starch present, but nothing to indicate the starchy tissues of cimicifuga or of phytolacca root; nor were there present the needle-shaped calcium oxalate crystals of phytolacca. If extractives of these substances are present, it is probable that a fluid extract was employed. The alcohol-soluble portion of the material contained small amounts of a bitter resin. Tests for salicylates, iron, arsenic, cinchophen, colchicum, phenolphthalein, and emodin bearing drugs, such as rhubarb, cascara and senna, were negative. Quantitative determinations were as follows:

"Specific gravity at 25 C	1.0251
"Alcohol (by volume)	9.3 per cent.
"Total solids	7.0 gm. per 100 c.c.
"Potassium iodid	4.2 gm. per 100 c.c.
"Total alkaloids	0.06 gm. per 100 c.c.
"Water-insoluble material	0.57 gm. per 100 c.c.
"Water-alcohol insoluble	0.40 gm. per 100 c.c.
"Ether extract	0.19 gm. per 100 c.c.

"From the foregoing examination, it is concluded that Dr. Tripp's Liquor Rheumatica is essentially a weak alcoholic solution of potassium iodid with a dash of cinchona alkaloids, to which has been added some powdered red saunders to which the product largely owes it physical appearance."

Here, then, we have a water-alcohol solution of potassium iodid with a dash of cinchona alkaloids advertised as "one of the most amazing discoveries ever made by that famous medical scientist, Dr. John Tripp." Eleven years ago when the Association's Laboratory analyzed Dr. John Tripp's Blood Purifier, which was then exploited as a cure for syphilis, the product was found to be a water-alcohol solution of potassium iodid with traces of cinchona alkaloid. From these analyses evidently Tripp's syphilis cure, alleged to have been puffed by Dr. Fred E. Stevens of Detroit, is essentially the same substance as Tripp's rheumatism cure now being puffed by Fred E. Stevens.

The alleged "amazing discovery" of Dr. John Tripp was neither amazing nor a discovery. For years the medical profession has used iodids in the treatment of chronic rheumatism, especially in those cases in which a syphilitic factor may be suspected. Before administering iodids, however, the physician determines whether or not these powerful drugs are contra-indicated. The purchaser of Liquor Rheumatica, of course, has no means of protecting himself against a dosing with iodids that may prove disastrous, because he is given no information regarding the presence of these drugs, and if he were, would have no knowledge of the dangers involved in their use. There is no excuse for the exploitation of a mixture such as Liquor Rheumatica in the form of a "home remedy" for self-drugging.

Correspondence

"IS ACRODYNIA A NEW DISEASE?"

To the Editor:—Your editorial on this subject (THE JOURNAL, October 17, p. 1225) interests me greatly. You speak of "the name acrodynia which Weston introduced to differentiate the disorder from pellagra." Allow me to call your attention to a paper of my own entitled "Acrodynia: Its Place in Medicine and Its Relation to Pellagra" (*Am. J. Trop. Med.* **1**:291 [Sept.] 1921). In this paper an effort is made to trace the history of this strange affection. One will find there recorded that, Aug. 26, 1828, M. Chomel (*Arch. gén. de méd.* **18**) called the attention of the Academy of Medicine to the disease which was designated épidémie de Paris, and a commission was named to study it. The first reference to this outbreak which I have been able to find was that of Genest in 1828 under the title, Recherches sur l'affection épidémique qui regne maintenant à Paris (*Arch. gén. de méd.* **18**). It is interesting to read that in one of the Paris cases the great Louis performed the necropsy and exposed the spinal cord and the nerve trunks searching for the lesion, without result of a positive kind.

In 1848 the Irishman Graves, in his Clinical Lectures, gave a splendid account of the disease picture.

My own experience with acrodynia did not occur until after the appearance of pellagra in the South. From 1907 to 1915, it occasionally happened that I felt justified in making the diagnosis of acrodynia. I recall one woman whom I found in my waiting room with her shoes off because of the terrific pain in the feet. In a number of cases after the diagnosis of acrodynia had been made, the unmistakable picture of pellagra developed. The occurrence of a palmar and plantar skin lesion in pellagra is by no means common, but it does occasionally occur and in every case in which I first recorded the diagnosis of acrodynia a revision had to be made and pellagra substituted.

Those interested will find in the French literature of 1828-1830 many excellent accounts of pellagra among the acrodynia cases.

It is well worth while in this connection to remember that the whole skin surface at various times has been affected by the pellagrous lesion. Extreme pain and other sensory subjective symptoms, especially in the extremities, is not infrequent in pellagra and, in fact, no symptoms recorded in acrodynia are lacking in pellagra, if a sufficiently large series of cases is considered.

After a study of about 2,000 cases of pellagra and after seeing during this period numerous illustrations of what was seen in Paris during the epidemic of 1828-1830, I felt justified in the belief that acrodynia is a type of pellagra, and that

if the case is kept under observation over a considerable period the justification will be found in the occurrence of the typical pellagra picture.

Certainly the term acrodynia was coined in Paris about 1830. EDWARD JENNER WOOD, M.D., Wilmington, N. C.

COMPLETE ANURIA

To the Editor:—The following report of a case of complete anuria should have been reported ten years ago; it is sent now because of current interest in such cases.

Mrs. L., aged 35, had an operation for suspension of the right kidney in 1903, and another operation of the same character on the same kidney in 1905, both operations having been performed elsewhere. When I first examined her, a large mass could be palpated in the right side of the abdomen. A diagnosis of hydronephrosis of the right kidney was made, and nephrectomy of the right kidney was done, May 4, 1915. A preliminary cystoscopic examination and pyelogram to establish the presence of the left kidney were not made.

Twenty-four hours after operation, the patient did not urinate. On catheterization, 2 ounces of urine was obtained. From that time on, no urine was excreted. The patient lived twenty-three days.

At necropsy the left kidney was discovered to be absent (congenital).

The patient had all her mental faculties to the last, with no symptoms of uremia at any time. There was profuse sweating, with a disagreeable, pungent, urine-like odor always present in her room, and even in the corridor outside. The case emphasizes the importance of making preliminary examination to establish the presence of the other kidney before nephrectomy. Few cases are reported in which the patient lived over twenty days.

A. H. FARNSWORTH, M.D., Grand Island, Neb.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

THE MELLON INSTITUTE AND POSTUM CEREAL

To the Editor:—The Mellon Institute of Industrial Research, University of Pittsburgh, has sent out some research material, "Coffee Drinking by the Aged" and "Coffee Drinking by Children." Will you please tell me who or what they are, and if this is propaganda?

H. N. JENNETT, M.D., Kansas City, Mo.

ANSWER.—The Mellon Institute of Industrial Research of the University of Pittsburgh is said to have for its essential aim the creation of new knowledge by scientific investigation in accordance with the Industrial Fellowship system. The institution was founded by Messrs. Andrew W. Mellon and Richard B. Mellon. An industrial concern or an association of industrial concerns may donate a certain sum of money for an industrial fellowship in which will be done work on a problem or group of problems that are of interest to the donors. In the instance referred to by Dr. Jennett, the Mellon Institute has recently sent out the two articles "Coffee Drinking by the Aged" and "Coffee Drinking by Children." These are accompanied by an introductory letter from the Mellon Institute stating that they are the result of some research that the institute is carrying on in a scientific investigation of "The Rôle of Hot Beverages in the Diet." The letter further states that this research is being carried out through an industrial fellowship. The two articles already mentioned seemed such obvious ex parte statements derogatory to coffee and caffein beverages that the Mellon Institute was written to and asked whether the donor of the industrial fellowship under which this work was being done was a commercial organization interested in the sale of coffee substitutes. The institute replied that with the permission of the fellowship donor they would gladly give the information asked for and stated that a copy of the request for information had been forwarded to the donor. A few days later a second letter came stating that the donor of the fellowship, Postum Cereal Company, Inc., Battle Creek, Mich., had granted permission to give the information desired. The company had stated also that other inquiries should be treated the same way. The Postum Cereal Company, Inc., shows an intelligent appreciation of the public's rights in the matter. Such industrial fellowships may well prove of incalculable value to the industries of the nation and the general plan for carrying on such work is altogether admirable. In sending out the results of work of this kind, however, public interest would be better served if the Mellon Institute would plainly state that the work is being financed by an industrial concern, and frankly give the line of business in which this concern is engaged.

EXCESSIVE PERSPIRATION

To the Editor:—I have become accustomed to bring my difficulties before you; this one is of a most distressing and personal nature. For ten years I have practiced surgery under the handicap of a most profuse activity of the sweat glands of the head and face. Incased within a Mayo type mask, I yet leak through each crevice and fold. The physical discomfort is enormous, and the mental worry over fear of infecting the wound through dropping globules is even greater. Can you make any suggestion as to eradication or additional safeguards? Normally of a nervous temperament, complicated surgery increases my rainfall. Atropin, in large dosage, gives considerable relief, but the rapid heart action, dry throat and tongue, etc., are unpleasant and, I fear, not particularly good for my well being. Would the employment of a small electric fan directed upward toward the face be an added danger to the patient, in your opinion? If published, please use initials only.

R. E. S.

ANSWER.—This seems to be purely a physiologic hyperhidrosis, very difficult to control. Aluminum chlorid solution is the best local application for it, used in a strength of 25 per cent. solution in water. Before it is applied, the surfaces should be rinsed so that they are free from grease or soap. A few drops of this solution is lightly applied over the surface. This can be repeated three days in succession and then should not be used for several days more. It usually causes marked reduction in the amount of sweating. Aluminum chlorid is a strong irritant, and this solution must be applied with care. If it produces irritation it should be washed off with plenty of water. The only thing that would produce an actual change in the sweat apparatus would be the application of roentgen rays to the point of causing slight atrophy of the sweat follicles. This has to be done very cautiously and should be done only by one who is skilful in the therapeutic application of roentgen rays. Sometimes, with the amount of the application of roentgen rays that one is warranted in giving, this method fails, but it can often be successfully carried out.

GLY-SO-IODONATE — "G. S. I."

To the Editor:—As surgeon for several industrial plants located in this city, I have had brought to my attention the products of the National Medical Research Laboratories, Milwaukee, which get out a surgical fluid called G. S. I. which they claim to be superior to tincture of iodin and all other known antiseptics. They do not publish the formula. Will you kindly investigate and inform me as to this preparation?

C. E. BURT, M.D., New Bedford, Mass.

ANSWER.—Gly-So-Iodonate ("G. S. I.") was refused admission to New and Nonofficial Remedies (THE JOURNAL, Dec. 22, 1923, p. 2118) because it was exploited under a nondescriptive and misleading name and with a statement of composition not only chemically absurd but obviously incorrect. Examination showed it to possess properties which were virtually "those of a solution of potassium mercuric iodid to which had been added a chemical hodge podge." In the same issue of THE JOURNAL, editorial comment was made on the Council on Pharmacy and Chemistry's findings concerning the unscientific character of the claims made for "G. S. I." The attention of the Bureau of Investigation having been called to the advertising methods used to exploit this preparation, an inquiry was made among a number of hospitals and industrial concerns the names of which appeared in "A Partial List of Representative Industries Protecting Their Many Thousands of Employees with G. S. I.," a circular sent out by the exploiters. The published result of this inquiry (THE JOURNAL, June 7, 1924, p. 1881) revealed no

enthusiastic users of "G. S. I.," and showed that the exploiters were using some references as misleading as the "formula" of their nostrum.

PONNDORF'S VACCINATION

To the Editor:—Kindly discuss Ponndorf's vaccination, and give references. Please use initials only. J. V. S., Chicago.

ANSWER.—Most of the interest in Ponndorf vaccination therapy has been confined to Europe. Some European articles have been abstracted in THE JOURNAL; for instance,

La Baume, F. S.: *Med. Klin.* **17**: 1289 (Oct. 23) 1921; abstr., THE JOURNAL, Jan. 14, 1922, p. 154.
Simon, W. V.: *Ztschr. f. Tuberc.* **35**: 449 (March) 1922; abstr., THE JOURNAL, May 13, 1922, p. 1502.
Chéinisse, L.: *Presse méd.* **31**: 325 (April 4-11) 1923; abstr. THE JOURNAL, June 9, 1923, p. 1738.
Paul, G.: *Wien. klin. Wchnschr.* **38**: 984 (Sept.) 1925; abstr., THE JOURNAL, Oct. 17, 1925, p. 1265.

According to the first of these, the method is as follows: "About twenty scarifications are made in the skin of the upper arm, each as long as a finger, stopping just short of the papillary layer, the scratches bleeding slightly. Then a concentrated tuberculin is dropped into the malpighian layer of the skin thus opened up by the scratches. As almost all diseases accompanied by eruptions immunize against further attacks, it seems rational to assume that by inducing intense esophylactic processes in the malpighian prickle layer of the skin, in this way or its equivalent, a tendency to immunization might be induced."

As to its efficacy as treatment, no concord of opinion exists.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ARKANSAS: Little Rock, Nov. 10-11. Sec., Reg. Bd., Dr. J. W. Walker, Fayetteville.
CONNECTICUT: New Haven, Nov. 10. Sec., Reg. Bd., Dr. Robert L. Rowley, 79 Elm St., Hartford; Sec., Homeo. Bd., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.
DELAWARE: Wilmington, Dec. 8-9-10. Pres. Med. Coun., Dr. Henry W. Briggs, 1026 Jackson St., Wilmington.
MAINE: Portland, Nov. 10-11. Sec., Dr. Adam P. Leighton, 192 State St., Portland.
MARYLAND: Baltimore, Dec. 8-11. Sec., Reg. Bd., Dr. Henry M. Fitzhugh, 1211 Cathedral St., Baltimore, Sec., Homeo. Bd., Dr. J. S. Garrison, 517 Old Orchard Rd., Baltimore.
MASSACHUSETTS: Boston, Nov. 10-12. Sec., Dr. Frank M. Vaughan, 144 State House, Boston.
NEVADA: Carson City, Nov. 2. Sec., Dr. Simeon L. Lee, Carson City.
NORTH CAROLINA: Raleigh, Nov. 25 (Endorsement of Credentials only). Sec., Dr. Kemp P. B. Bonner, Morehead City.
OHIO: Columbus, Dec. 2-4. Sec., Dr. H. M. Platter, Hartman Hotel Bldg., Columbus.
PHILIPPINE ISLANDS: Manila, Nov. 10. Sec., Dr. Jose V. Gloria, 686 Rizal Ave., Manila.
SOUTH CAROLINA: Columbia, Nov. 10. Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.
TEXAS: Dallas, Nov. 17-19. Sec., Dr. T. J. Crowe, 918-919 Mercantile Bank Bldg., Dallas.
VIRGINIA: Richmond, Dec. 8-11. Sec., Dr. J. W. Preston, 720 Shenandoah Life Bldg., Roanoke.

Florida June Examination

Dr. William M. Rowlett, secretary of the Florida Board of Medical Examiners, reports the written examination held at Tampa, June 15-16, 1925. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 251 candidates examined, 204 passed and 47 failed. The following colleges were represented:

PASSED College	Year Grad.	Per Cent.
Birmingham Medical College	(1911)	78.5
University of Alabama School of Medicine	(1910)	81.2
Columbian University	(1900)	83.4
George Washington University Medical School	(1907)	76.2
Atlanta College of Physicians and Surgeons (1912) 79.8, 82.1, (1913) 75	(1904)	80.2
Atlanta Medical College (1914) 75, 77.7, 77.8, 84.9, (1915) 79.5, 82.6, (1916) 75.6	(1893)	75
Atlanta School of Medicine (1911) 78.1, 81.6, 82.7, (1912) 78.2	(1907) 75.9, (1908) 75, (1910) 77.3,	80.1,
Emory University School of Medicine 78.5, (1923) 77.5, 78.7, 80.5, (1924) 80.3, 82.2, 83, 83.2, 84.7, (1925) 78, 79, 80.9, 81.8, 82, 82.3, 82.5, 82.6, 83.7, 84.2, 84.4, 84.6, 85.8, 85.9, 85.9, 86.8, 86.9, 87.1, 87.6, 88, 89.2, 91.5	(1918)	75, 75.6, 81.7, (1919) 85.4, (1921) 75, 88.6, (1922) 75, 76.6,
University of Georgia Medical Department (1901) 75, (1902) 75, (1908) 75, (1916) 77.8, (1920) 82.4, (1922) 82.2, 88.4, (1924) 78.1, 79.5, 83.3, (1925) 81, 81.4	(1891)	76.8,
Bennett Medical College	(1907)	81.9
Chicago College of Medicine and Surgery	(1916)	78.4
College of Physicians and Surgeons, Chicago	(1906)	80.6
Hahnemann Medical College and Hospital, Chicago	(1911)	80.
Loyola University School of Medicine	(1918)	82.9
Northwestern University Medical School (1924) 77.9, 84.8, 86.7, 88, (1925) 82.3	(1894) 82.6, (1915)	79.7,
Rush Medical College (1903) 82.5, (1913) 86.3, (1916) 81.5	(1892) 76.9, (1897) 77.9, (1900)	75,
University of Illinois College of Medicine	(1925)	85.3
Indiana University School of Medicine (1924) 81.4, (1925) 82.4, 84	(1917) 81.9, (1923)	83.8,
Medical College of Indiana	(1897) 75, 78.4, (1904)	75.8
Drake University College of Medicine	(1903)	79.5
State University of Iowa College of Homeopathic Med.	(1897)	75
Kentucky School of Medicine	(1900)	75.7
Louisville Medical College	(1894)	79.1
University of Louisville School of Med	(1894) 76, (1921)	82.5
Tulane University of Louisiana School of Medicine (1920) 83.9, (1921) 77.3, (1922) 80, (1923) 77, 77.8, 86, (1924) 87.6, (1925) 82.8, 83	(1913)	79.5
Medical College of Louisiana	(1909) 78.8, (1910)	79.7
Baltimore Medical College	(1906)	76.8
College of Physicians and Surgeons, Baltimore	(1909)	79.6
Maryland Medical College	(1904) 76.5, 77.7, (1905)	75, 75.3
University of Maryland, School of Medicine	(1914)	84.9
Boston University School of Medicine	(1900) 83.7, (1924)	82
Harvard Univ (1903) 75, (1917) 85.3, (1924)	(1895) 82.7,	85.4
Tufts College Medical School, Boston (1916) 75, (1922) 88.8	(1905) 79.6,	
University of Michigan Medical School	(1913)	81.5
University of Minnesota Medical School	(1921) 79.9, (1924)	82.9
Kansas City Medical College	(1898)	81.3
St. Louis University School of Medicine	(1924)	83.9
University Medical College of Kansas City	(1900)	75
Washington University School of Medicine	(1924)	81
John A. Creighton Medical College	(1906)	75
Columbia University College of Phys. and Surgs	(1905)	79.9
Cornell University Medical College	(1923)	83.3
Long Island College Hospital	(1922) 80.6,	87.8
New York Homeopathic Med. Coll. and Flower Hosp	(1921)	87.1
New York University Medical College	(1888)	82.3
Syracuse University College of Medicine	(1923)	81.2
University and Bellevue Hospital Medical College	(1905)	76
University of North Carolina, School of Medicine	(1910)	77.8
Ohio State University College of Medicine (1921) 82, (1923)		80.3
Starling Medical College	(1907)	82.1
University of Cincinnati College of Medicine	(1924)	80.7
Hahnemann Medical College and Hosp. of Philadelphia	(1897)	75
Jefferson Medical College of Philadelphia (1923) 82.6, (1924) 87 3	(1912) 78.6, (1922)	80.8, 81.4,
Medico-Chirurgical College of Philadelphia	(1914)	81.5
Temple University Department of Medicine	(1911)	84.8
University of Pennsylvania School of Medicine (1919) 84.6, (1920) 83.4, (1923) 82.4	(1894) 75, (1901) 81.7, (1904) 82.3, (1911) 80.8,	77.2,
Western Pennsylvania Medical College	(1907)	80.5
Medical College of the State of South Carolina (1914) 85.6, (1915) 75, 78.4, (1916) 81.5, (1920) 82.1, (1922) 85.5	(1911)	78.5,
Meharry Medical College	(1917)	75
Memphis Hospital Medical College	(1904)	75
University of Tennessee College of Medicine	(1925)	81.9
Vanderbilt University School of Medicine (1915) 82.5, (1917) 85, (1922) 82.3, (1923) 77.6, (1924) 81.6	(1900) 75, (1914)	77.5,
University of Texas Department of Medicine	(1919)	78.7
University of Vermont College of Medicine	(1897)	78.1
Medical College of Virginia (1923) 82.7, (1925)	(1909) 84.8,	82.6
University College of Medicine, Richmond	(1913)	77
University of Virginia Dept. of Medicine (1924)	(1901) 77.4,	84.6
Milwaukee Medical College	(1912)	77.7
McGill University Faculty of Medicine, Montreal	(1897)	84.6
University of Toronto Faculty of Medicine, Ontario	(1917)	78.2
Licentiate of the Royal College of Surgeons, Edinburgh	(1907)	82.9

FAILED College	Year Grad.	Per Cent
Atlanta College of Phys. and Surgs (1908) 59.4, (1911) 68.5, 69.2	(1903) 71.8, (1906) 66.3,	66.3, 66.9,
Atlanta Medical College	(1914) 66.4, (1915)	73.7
Atlanta School of Medicine	(1911) 65.8, (1913)	66
Emory University School of Medicine	(1922)	65.3
Georgia College of Eclectic Medicine and Surgery	(1909)	68.2
Southern College of Medicine and Surgery	(1913)	73.7
University of Georgia	(1893) 69.5, (1907) 61.3, (1911)	71
Loyola University School of Medicine	(1916)	70.6
Northwestern University Medical School (1905) 73.2, (1909) 68.5	(1902)	72.9
College of Physicians and Surgeons, Chicago	(1908)	68
Fort Wayne College of Medicine	(1896)	61.9
University of Louisville School of Med	(1892) 54.2, (1912)	70.5
Medical College of Louisiana	(1906) 72.8, (1912)	70
Baltimore Medical College	(1906)	67.9
Saginaw Valley Medical College	(1899)	60.8
University of Michigan Medical School	(1880)	66.1
Eclectic Medical College, Cincinnati	(1910)	73
Jefferson Medical College of Philadelphia (1905) 73.8, (1912) 73.4	(1887)	67.5,
Medico-Chirurgical College of Philadelphia	(1899)	60.9
Chattanooga Medical College	(1901) 55.4, (1904)	61.2
Memphis Hospital Medical College	(1909)	69.8
University of Nashville	(1905)	69.5
Vanderbilt University School of Medicine (1914) 69.7	(1883) 63, (1893) 68.5,	69.6,
University of Vermont College of Medicine	(1882)	65.9
University College of Medicine, Richmond	(1905)	73
University of Havana, Cuba	(1923)*	57.1
University of Kharkov, Russia	(1905)*	68.3

* Graduation not verified by the American Medical Association.

Book Notices

PEDIATRIC NURSING. A Textbook for Nurses. By Abraham Levinson, B.S., M.D., Associate in Pediatrics, Northwestern University Medical School. Cloth. Price, $2.50. Pp. 251, with 28 illustrations. Philadelphia: Lea & Febiger, 1925.

It requires a fine sense of discrimination to write a textbook for nurses. It is difficult to present the subject matter at the proper level for the student or graduate nurse. If the material presented is too technical, the wearied nurse cannot comprehend or nods asleep during her study hour. Levinson evidently had this in mind when he prepared this little book. He has given a great deal of detailed information in concise form, and he has spoken in simple English so that all may understand. A nurse who will carefully prepare herself with this volume in hand will know all the facts necessary in nursing sick children. It is important that nurses should read well constructed texts. Levinson discusses the anatomy, physiology and general care of infants. He also gives instruction to the nurse in the general methods of examination. He shows her how to hold the child, how to prepare the patient for the various examinations, how to collect the urine, how to take the temperature. Indeed, he emphasizes the nursing technic that should accompany a well conducted physical examination. His chapter on treatment is short and to the point, and he gives a table of doses of various drugs which should be invaluable to the bedside nurse. He considers briefly a group of the more common diseases, and indicates the proper treatment of each. In the concluding chapters he gives some good advice based on psychology and common sense. He has written a very readable book. However, it may be said of nurses that no matter how many college degrees they bear, how many honorary keys they have won or how many textbooks they have read, the art of nursing is learned in the hospital ward. The gift of administering gently to the sick is heaven born. The good nurse has a gentle hand and a noble heart, and strives to serve and to heal.

DIE MEDIKAMENTÖSE BEHANDLUNG DER HARNROHRENGONORRHÖE DES MANNES UND DEREN PHARMAKOLOGISCHE GRUNDLAGEN. Von Dr. Alfred Perutz, Privat-Dozent für Haut- und Geschlechtskrankheiten an der Wiener Universität. Paper. Price, 9 marks. Pp. 266, with 13 illustrations. Berlin: Urban & Schwarzenberg, 1925.

This book approaches the treatment of urethral gonorrhea in the male from a medicopharmacologic point of view only. In the introductory chapters the nerve supply of the male genito-urinary apparatus is discussed at length and its differential reaction toward drugs analyzed as to the subsequent response of the parts involved, particularly the vas deferens and the epididymis. Valuable information is conveyed by the analysis of the specific action of the drugs to be employed and how antagonistic effects may be prevented in combining these, avoiding incompatibility produced by faulty concentration or inappropriate mixture. Special stress is laid on the general therapeutic and dietetic regimen. After these general principles are elucidated, the special forms of treatment are taken up, the pharmacodynamic action of the various medications always being considered. The serodiagnosis of gonorrhea and passive and active immunization are also explained. A valuable chapter deals with parenteral protein therapy, which recently has aroused much attention. The closing chapters are devoted to a discussion of the complications occurring during the course of urethral gonorrhea and to a survey of the provocatory methods.

DISEASES OF THE BRONCHI, LUNGS AND PLEURA. By Frederick T. Lord, M.D., Instructor in Medicine, Harvard Medical School. Second edition. Cloth. Price, $8. Pp. 776, with 110 illustrations. Philadelphia: Lea & Febiger, 1925.

In this edition, Dr. Lord has accumulated the newer contributions to his subject during the last decade, especially along bacteriologic and immunologic lines and in the advance of thoracic surgery. The literature as a whole is reviewed up to 1923. In its present shape, the book represents a reliable and rather conservative guide through the vast and bewildering field which it covers with a remarkable completeness as to the variety of pathologic conditions. The text abounds in references, and the fact that Dr. Lord always refers to the original works and the classics in medicine makes it particularly valuable as a reference book. A new chapter on pulmonary tuberculosis is added, which does not reach the standard of the other chapters. While divergent opinions, wherever they arise, are objectively enumerated, the expression of a personal opinion and the results of the author's vast experiences are rather missed throughout the book; this applies especially to all discussions on therapy. A reader without experience will find little advice from Dr. Lord, but a wealth of statistical data and strictly objective compilations. It is felt that the great variety of even very rare conditions discussed is somewhat at the cost of the completeness of the individual subjects. All this makes this book valuable in the hands of the experienced reader, but less suitable as a textbook for the beginner in this special field of medicine.

DIABETIC DIET. A Handbook for Diabetics. By A. Doris McHenry, B.A., and Marjorie M. Cooper, B.A. With a Preface by J. A. Gilchrist, B.A., and M.D., and F. G. Banting, M.C., M.B., M.R.C.S. Cloth. Price, $2. Pp. 62. New York: Harper & Brothers, 1925.

There are now available numerous books on diet for the patient with diabetes. The present little book emanates from the Banting clinic in Canada. It presents the very essentials of the subject in brief form, including discussions of weights and measures and the routine analysis of urine. Most of the sixty pages are filled with recipes. The book is safe for public recommendation.

INTERNAL SECRETION AND THE DUCTLESS GLANDS. By Swale Vincent, LL.D., D.Sc., M.D., Professor of Physiology in the University of London. Third edition. Cloth. Price, $10. Pp. 463, with 112 illustrations. New York: Physicians and Surgeons Book Company, 1925.

Physicians will welcome the new edition of this standard and scholarly book. The author has devoted more than twenty-five years to intensive study and research in the field of the endocrine glands. The exposition of the physiology and pathology of the ductless glands is comprehensive, clear and thorough, and his conclusions are rational when conflicting views of uncertain relationships are dealt with. The present edition contains much new matter, especially in the chapter on the pancreas and the chapter on the reproductive organs. The number of illustrations has been increased from 105 to 112, and a short chapter on organotherapy has been added to the book. The portions dealing with clinical subjects have been still further expanded, and this will make the book still more useful to medical students and practitioners.

HAND-ATLAS OF CLINICAL ANATOMY. By A. C. Eycleshymer, B.S., Ph.D., M.D., Dean of College of Medicine and Director of Department of Anatomy, College of Medicine, University of Illinois, and Tom Jones, B.F.A., Director of Anatomical Illustration and Instructor in Anatomy, College of Medicine, University of Illinois. With special dissections by O. E. Nadeau, B.S., M.D., Associate in Surgery, University of Illinois. Cloth. Price, $11. Pp. 424, with 395 illustrations. Philadelphia: Lea & Febiger, 1925.

During the war, a special manual of surgical anatomy was prepared under the direction of Dr. Eycleshymer. It met immediate acceptance and popularity and quickly reached an edition of 10,000 copies. The present edition of this work includes the anatomy of the female, and the addition of some 150 new and original plates and 207 new drawings. There is a complete explanatory index which makes the descriptive text unnecessary. This volume is one of the most valuable atlases available to the medical student or the surgeon.

MANUEL ÉLÉMENTAIRE DE PUÉRICULTURE. A l'usage des mères, des infirmières visiteuses, du personnel des crèches, pouponnières, chambres d'allaitement, garderies, consultations de nourrissons et des diverses œuvres d'assistance a la maternité. Par Dr. Clotilde Mulon. Médecin-chef de la pouponniere du camouflage. Préface de M. le Professeur Marfan, Membre de l'Académie de médecine. Second edition. Paper. Price, 10 francs. Pp. 234, with 21 illustrations. Paris: Masson et Cie, 1925.

This book is similar to many of a like nature that have appeared in this country. It begins with a discussion of infant mortality, and one is struck with the fact that deaths from diarrhea are given a first place and apparently occur three times as frequently as do respiratory conditions in

France. This chapter is followed by chapters on hygiene, preparation for delivery, physiology of nutrition, care of the premature or debilitated infant, breast nursing, artificial nursing, weaning, the diseases of children, instruction and care in dispensaries, infant welfare stations, and day nurseries. The volume closes with chapters on the laws of France governing child care and protection.

Medicolegal

Evidence of Reputation of Mental Condition Barred

(In re Wah-kon-tah-he-um-pah's Estate (Okla.), 234 Pac. R. 210)

The Supreme Court of Oklahoma, in affirming a judgment admitting to probate the will of an Osage allotee, says that the contestants complained because the trial court would not permit them to show by one witness that the testatrix was generally known and referred to by her acquaintances as the "old crazy woman." No case was pointed out to the supreme court wherein evidence of the general reputation of being crazy was admitted, in the trial of a will contest, as bearing on testamentary capacity, or the lack thereof, of the testator. This court knows of no such case. In the absence of a case deciding the point, this court is inclined to think that evidence of general reputation as to mental capacity or incapacity of a party making a will is not admissible. Even if the court had admitted the proof of general reputation offered, and all of the contestants' witnesses had testified that the testatrix had the general reputation of being an old crazy woman, still the court should apply the rules laid down by the cases in determining the testamentary capacity or lack thereof; and if the testatrix should measure up to the rules laid down by this court for determining mental capacity, as applied at the time the will was made, the court would be constrained to follow the decided cases, rather than evidence of general reputation. This court thinks that evidence of general reputation of mental condition of the testatrix was not admissible for the purpose of determining testamentary capacity, or the lack thereof, at the time the will was made, and that the trial court did not err in excluding such evidence.

Identification of Roentgenograms—Basis of Testimony

(Mattice v. Terminal R. R. Ass'n of St. Louis (Mo.), 270 S. W. R. 306)

The Supreme Court of Missouri, Division No. 1, says that in this action for personal injuries a physician testified that he was a roentgen-ray specialist, had "examined x-rayically the right arm of the plaintiff," and had the "x-rays" that he made at that time. The plaintiff offered the roentgenograms in evidence in connection with the testimony of another physician. Objection being made that they had not been sufficiently identified, the plaintiff did not press his offer but later recalled the roentgenologist. The latter testified that one of the roentgenograms was a roentgenogram of the plaintiff's right forearm; that it bore the title "Mr. Mattice, File 17927, Nov. 1922," which was the date the roentgenogram was made, adding: "I didn't examine the hand myself, any more than just the x-ray; no physical examination at all." On cross-examination he testified that he took the pictures himself, but did not do the development of them himself; that "you get them out of the dark room, and you send them back, and watch them after they are developed and check these things all during the process. Although I wasn't in the dark room, I know this is the same plate that I took of plaintiff's arm because you go in there as soon as they are in the hypo; you see these things before the process of silver elimination is complete. . . . I am positive that this is the plate that I took, although it passed out of my hands and stayed a while in the dark room." Again he testified: "These pictures were developed immediately after the exposures were made, before the man leaves the office. They are checked up before he gets out. We do not have more than one patient's plates in there at a time, that is, being developed at the same time. We take a patient and finish him up, especially on work of this sort. . . . I have an idea we did have some other broken arms that same morning, but that is a roentgenogram of this man's arm." Such being the testimony, and the defendant standing on its objection to the introduction of the roentgenograms in evidence, plaintiff's counsel withdrew his offer of the roentgenograms.

The roentgenologist had also been examined at length concerning what was shown by the roentgenograms, and at the close of the evidence defendant's counsel asked the trial court to exclude the roentgenologists' testimony and to instruct the jury to disregard it, on the ground that his testimony was based on plates that he held in his hand and from which he testified, which had not been sufficiently established to justify him in testifying from them. The trial court refused that request; and the supreme court holds that was not error, under all the circumstances. The trial court did not have an opportunity to rule directly on the admissibility of the roentgenograms, because the plaintiff withdrew his offer of them, but the supreme court concludes that there was sufficient identification of them to make them admissible in evidence, and to make them the proper basis, as the trial court held, of the testimony of the roentgenologist. However, it seems clear to the supreme court that if the evidence was insufficient to warrant the introduction of the roentgenograms themselves, as pictures of the arm of the plaintiff, then the evidence was equally insufficient as a basis for the admission of testimony by the witness as to what they showed as to the condition of the plaintiff's arm. There was no theory or situation developed such as made the roentgenograms or testimony as to what they showed valuable or admissible except they were pictures of the plaintiff's arm and wrist.

Privilege Not Physician's—None Under Workmen's Act

(Doty et al. v. Crystal Ice & Fuel Co. (Kan.), 235 Pac. R. 96)

The Supreme Court of Kansas says that in this action, brought by the widow of a workman on behalf of herself and minor children as dependents under the workmen's compensation act, the plaintiffs endeavored to show that the death of the workman was the result of an injury which he sustained, January 20, by falling from a scaffold and striking his head either on the floor or on an iron pipe. He lay off three days and then returned to work, making no complaint about his injuries. About May 20 he was taken sick, and he died, May 31. The physician's certificate showed that death resulted from cerebrospinal meningitis. The man's physical condition from the time of the injury until his death was detailed by the plaintiffs and other witnesses. The nurse who attended him in his last sickness testified that there was nothing about his symptoms to indicate spinal meningitis, though the attending physician took a specimen of the spinal fluid. Two physicians testified from a hypothetic question that death resulted, or might have resulted, from the injury. The defendant called the physician who attended the man in his last sickness and who made out the death certificate, and asked him several questions pertaining to the cause of death, the taking of specimens of spinal fluid, and the laboratory test. Counsel for the plaintiffs advised the witness that he was privileged to refuse to testify. The widow for herself waived the privilege of the witness. The trial court held that the privilege was personal to the physician, who claimed the privilege and was not required to testify. But the supreme court holds that the provision of the Civil Code of Kansas that a physician or surgeon shall be incompetent to testify concerning any communication made to him by his patient with reference to any physical disease or injury or concerning any knowledge obtained by a personal examination of the patient, without the consent of the patient, does not create a privilege personal to the physician, and that the trial court erred in holding the privilege created to be a privilege personal to the physician. Furthermore, it seems clear to the supreme court that the plaintiffs waived the privilege of the witness, if one existed, not only by the waiver by the widow in open court, but by the nature of the evidence offered by them.

Still another reason why the ruling of the trial court was erroneous was that the provision of the civil code referred to above has no application to the testimony of physicians in claims for compensation under the workmen's compensation

act. That act embodies a plan to compensate workmen, or their dependents, for loss of earnings because of personal injuries received by the workman, arising under the circumstances designated in the act. Necessarily, the inquiry in every case is the nature and extent of the physical injury produced by the accident, which includes, of course, whether the physical injury, or the death, was caused by the accident or resulted from other causes. This, ordinarily, is essentially a medical question, which can be determined only by the testimony of a physician who examined or treated the workman. Hence the Kansas statute provides for such examination and the use of the testimony of the physician.

Views and Ruling Concerning Charitable Hospitals

(Roberts v. Ohio Valley General Hospital (W. Va.), 127 S. E. R. 318)

The Supreme Court of Appeals of West Virginia says that this was an action for damages for an alleged injury from negligent and unskilful treatment by one of the defendant's nurses while the plaintiff was a paying patient at the defendant's hospital. The defendant filed a special plea setting forth its character as a charitable institution. An objection to the plea was sustained and the plea rejected. The case was then certified to this court on the joint application of both parties to the suit, who desired a ruling on the sufficiency of the plea. The exact question involved had never been determined by this court.

Public policy demands that charitable institutions be fostered and preserved. To this end, the law should deal with them more leniently than with institutions conducted solely for private gain. No human endeavor of any magnitude is immune from mistakes. No matter how strict a rule might be enforced against institutions of this nature, mistakes in treatment would occasionally happen. Employees and servants selected with ordinary care, however, will execute the charity with but few mistakes. If no care be had in their selection, mistakes will necesarily multiply. The purpose of the founders of a charity is to help those who need assistance. They propose, not unskilful or incompetent aid, but humane and efficient treatment. The subject of an employee's negligence is harmed instead of helped by the charity. The will of the donors is thwarted instead of served when an object of their beneficence suffers from such neglect. When administered by incompetent servants, charity, instead of being a great boon to humanity, may become a menace. One who enters a hospital expects, and has a right to expect, more skilful treatment than is obtainable in the home. If such institutions be not held to reasonable care in the selection of their employees, confidence in their efficacy will be shaken. Many who need, will fear to accept hospital treatment, and those who do apply therefor will lack the faith therein that is so frequently half the battle in the contest with disease.

In order that the high purpose of the donors of a charitable hospital may be best served, that those who need aid may not hesitate to accept the charity, and to prevent as far as may be human suffering from acts of negligence and incompetence, it would seem imperative to require of those in charge reasonable care in the selection and retention of the employees. The fact that one is a paying patient does not alter the rule. Such patient is the recipient of the donors' gratuity only in a lesser degree than one who makes no payment. The hospital building, with its equipment, management, and its great possibilities for the alleviation of suffering, was provided by charity. In using the organization made possible and supported by that charity, a paying patient, to that extent, benefits by the charity.

Because of its failure to allege that the defendant used reasonable care in selecting the nurse of whose negligence the plaintiff complained, this court holds that the plea as presented did not in terms state a defense to the action, and the judgment of the lower court is therefore affirmed. As stated in the syllabus by the court, it is incumbent on a charitable hospital to use reasonable care in the selection and retention of its physicians, nurses and attendants; and for failure to do so it is liable for injuries due to their incompetence, received by its patients.

Privilege as to Physicians and Third Persons

(Southwest Metals Co. v. Gomez (U. S.), 4 Fed. R. (2d) 215)

The United States Circuit Court of Appeals, Ninth Circuit, in reversing a judgment obtained by plaintiff Gomez, says that this was an action to recover damages for personal injuries, based on the employers' liability law of Arizona. The plaintiff testified that after the accident certain physicians removed dirt from his eye. The physicians who attended him were called by the defendant company, and an inquiry was made as to the truth of that statement. The testimony of the physicians was objected to on the ground that the relation of physician and patient existed and that the testimony was incompetent. The objection was sustained. The nurse who assisted the physicians was then called as a witness, but her testimony was objected to for the like reason and the objection sustained.

If the question were an open one, much might be said against the justice and wisdom of a rule that permits a party to a suit to offer testimony tending to show that a physician removed dirt from his eye, or fragments of bone from his leg, and forbids the physician to give testimony controverting that fact; but that such is the effect of the statute of Arizona with regard to privileged communications, as construed by the supreme court of the state, does not admit of question; and that statute of the state, as construed by its highest court, is binding on this court.

The claim of privilege on behalf of the nurse presented a more difficult question. All the authorities agree that the privilege or exemption does not extend to a third person who is present and overhears the communication between the physician and the patient. Under such circumstances, some of the cases hold that both the physician and the third person may testify, while others hold that as to the physician the privilege is not waived. The plaintiff did not controvert this general rule, but contended that it has no application where the third person acts as agent of or assistant to the physician. This court has examined the cases cited in support of this contention, and many others, and finds that in every case the agent or assistant was himself a physician or surgeon. The rule excluding hospital records kept under the direction of the physician had no application here, and the same was true of cases in which the intervention of a third person was strictly necessary to enable the physician to communicate with the patient. The statute is limited by its terms to physicians and surgeons. If public policy demands that the privilege of the physician and surgeon should be extended to nurses and other attendants who are neither physicians nor surgeons, the change should be made by the legislature, not by judicial construction. The ruling excluding the testimony of the nurse was prejudicial error.

Objection to the question asked on cross-examination of a physician who testified for the plaintiff, "Do you make it a habit of appearing for plaintiffs in these personal injury cases?" was properly sustained on the ground that the question was too indefinite and called for the conclusion of the witness, if for no other reason.

Society Proceedings

COMING MEETINGS

Central States Pediatric Society, Chicago, November 6-7. Dr. H. T. Price, Westinghouse Building, Pittsburgh, Secretary.

District of Columbia, Medical Society of, Washington, D. C., Dec. 2. Dr. C. B. Conklin, 500 Medical Science Bldg., Washington, D. C., Sec'y.

Philippine Islands Medical Association, Manila, Dec. 16-19. Dr. Isabelo Concepcion, College of Medicine and Surgery, Manila, Secretary.

Porto Rico, Medical Association of, Coami, Dec. 14-15. Dr. R. M. Suarez, Box 314, Santurce, Secretary.

Radiological Society of North America, Cleveland, Dec. 7-11. Dr. Robert J. May, St. Luke's Hospital, Cleveland, Secretary.

Southern Medical Association, Dallas, Texas, November 9-12. Mr. C. P. Loranz, Empire Bldg., Birmingham, Ala., Secretary.

Southern Surgical Association, Louisville, Ky., Dec. 15-17. Dr. Hubert A. Royster, 423 LaFayette Street, Raleigh, N. C., Secretary.

Western Surgical Association, Wichita, Kan., Dec. 18-19. Dr. Harry P. Ritchie, Lowry Building, St. Paul, Minn., Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL for a period of three days. No foreign journals are available prior to 1920, nor domestic prior to 1923. Periodicals published by the American Medical Association are not available for lending, but may be supplied on order. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested).

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

74: 1-224 (Sept. 1) 1925

Development of Progression and Posture in Young Opossums. O. R. Langworthy, Baltimore.—p. 1.
Conditioned Salivary Reflex Established by Chronic Morphin Poisoning. K. H. Collins and A. L. Tatum, Chicago.—p. 14.
*Effect of Abdominal Pressure on Urine Volume. J. Q. Griffith and H. R. Hansell, Philadelphia.—p. 16.
*Glyconeogenesis. J. Markowitz, Toronto.—p. 22.
Depancreatized Dogs Before and After Withdrawal of Insulin. I. L. Chaikoff, J. J. R. Macleod, J. Markowitz and W. W. Simpson, Toronto.—p. 36.
*Physiology of Liver. XI. Extrahepatic Formation of Bilirubin. F. C. Mann, C. H. Sheard and J. L. Bollman, Rochester, Minn.—p. 49.
*Effects of Bilateral Vagotomy on Blood Pressure. C. I. Reed, Chicago.—p. 61.
Nutritive Values and Physiologic Effects of Different Fats and Oils. F. J. McClure and R. H. Carr, Lafayette, Ind.—p. 70.
*Intravascular Use of Heparin. C. I. Reed, Chicago.—p. 79.
Training Heart by Systematically Regulating Respirations. P. F. Swindle, Milwaukee, Wis.—p. 82.
Chemical Sensitiveness of Kidneys. E. F. Adolph, Baltimore.—p. 93.
Relationship Between Volume and Reaction of Urine Specimens. R. S. Hubbard, Clifton Springs, N. Y.—p. 111.
*Effect of Sleep on Blood Pressure. M. A. Blankenhorn and H. E. Campbell, Cleveland.—p. 115.
Conductivity in Compressed Cardiac Muscle. I. Recovery of Conductivity Following Impulse Transmission in Compressed Auricular Muscle of Turtle Heart. R. Ashman, New Orleans.—p. 121.
Id. II. Supernormal Phase in Conductivity in Compressed Auricular Muscle of Turtle Heart. R. Ashman, New Orleans.—p. 140.
Normal Variations of Percentage Weights of Body Organs of Albino Rat with Changing Body Weight. A. T. Cameron, Winnipeg, Can.—p. 151.
Electrogram of Ventricle. S. de Boer, Amsterdam, N. Y.—p. 158.
*Contractions of Gallbladder. N. B. Taylor and M. J. Wilson, Toronto.—p. 172.
*Tonus Rhythms in Bowel. W. C. Alvarez, San Francisco.—p. 181.
Emotional Reactions. IV. Metabolic Rate. C. Landis, Minneapolis.—p. 188.
Heat Regulation and Water Exchange. X. Water, Salt and Lipoid Accumulation in Serum as Preliminary to Sweating. H. G. Barbour, M. H. Dawson and I. Neuwirth, Louisville.—p. 204.

Effect of Abdominal Pressure on Urine Volume.—Griffith and Hansell assert that diuresis analogous to that obtained in baths occurs on the application of appropriate pressure to the abdomen. The evidence would seem to indicate that there is an optimum pressure for producing diuresis, different for different individuals, and that the more nearly the applied pressure approaches the optimum pressure the greater the diuresis. Thus too low pressures might be ineffective, while too high pressures may even cause partial suppression. It would appear that the cause of the diuresis on application of pressure should be sought in connection with increased venous pressure or other physical phenomena, rather than in greater urea excretion.

Glyconeogenesis.—Markowitz' experiments, together with those quoted from the literature, demonstrate that glycogen is an obligatory, and not an optional step in the formation of blood sugar from the noncarbohydrate stores of the organism.

Extraheptic Formation of Bilirubin.—The evidence presented by Mann et al. would seem to be final evidence that the pigment which develops in the dehepatized animal is bilirubin and that extrahepatic formation of bile pigment is possible.

Effects of Bilateral Vagotomy on Blood Pressure.—An analysis is presented by Reed of 103 experiments in which the results of bilateral vagotomy were studied. There was no close correlation between cardiac and vasomotor responses to this operation. In experiments in which the operation was performed in the early stages of anesthesia and before any pronounced degree of shock had occurred, the predominant response was a rise in blood pressure independent of changes in heart rate, which was persistent and progressive in nearly all cases. In many experiments in which a profound degree of shock had occurred the response to vagisection was a characteristic rise in arterial blood pressure, showing that the post-vagotomy depression in blood pressure does not invariably follow a condition of general shock.

Intravascular Use of Heparin.—Reed asserts that heparin is valuable as an in vitro anticoagulant when it is desirable to retain all other physical and chemical properties undisturbed. Ten milligrams per kilogram of body weight is the minimum dependable dosage. Precautions for its use are mentioned.

Effect of Sleep on Blood Pressure.—The blood pressure averages of twenty-five patients for thirty-eight nights are offered by Blankenhorn and Campbell, showing the occurrence of the minimum systolic point (101 mm.) at the fourth hour of sleep, a slight rise before waking and an abrupt rise after waking to a point equal to the first hour of sleep. The diastolic pressure shows a like though lesser fall. The pulse shows a curve almost similar to that of the pressure. The fall of the pressure is due mainly to the fall of pulse rate, though it is probably somewhat influenced by the peripheral relaxation.

Contractions of Gallbladder.—A method is described by Taylor and Wilson for recording contractions of the gallbladder in dogs which eliminates some defects. A marked contraction of the gallbladder on injecting 40 c.c. of a 33 per cent. magnesium sulphate solution into the duodenum was found in one dog out of eight; slight tonic contractions were seen in several others. Epinephrin intravenously caused a fall in gallbladder pressure, succeeded by a marked rise in pressure and increased amplitude of the rhythmic contractions. Repeated injections abolish the initial fall, but increase the tonic effect. Pilocarpin raised the tone slightly, but had no effect on rhythmic activity. Bile (3 c.c.) intravenously lowered tone and depressed the rhythmic contractions. Morphin and apomorphin slowed the rhythm, without affecting the amplitude. Secretin intravenously had no appreciable effect on the motor activity. Ten cubic centimeters of 30 per cent. sodium chlorid intravenously temporarily increased the rhythmic contractions.

Tonus Rhythms in Bowel.—In addition to the segmenting movements and the peristaltic rushes in the bowel, Alvarez has noted slow tonus waves. In the duodenum and jejunum of the cat, this tonus rhythm can exist alone. This tonus rhythm is sometimes captured by the stomach and made to follow it for a time. The tonus waves do not seem to travel along the bowel. They appear in records from the excised bowel and in records made with a balloon in the jejunum of a man. At the height of the tonus contraction, there is sometimes a marked increase in the rate of the superimposed rhythmic contractions. Mere distention of the bowel does not ordinarily produce such an increase in rate. Tonus waves in one part of the digestive tract will sometimes seem to affect positively or negatively the activities of another part. These waves probably have a good deal to do with starting and stopping the peristaltic rushes.

Annals of Surgery, Philadelphia

72: 321-511 (Sept.) 1925

*Surgical Treatment of Habitual Criminals, Imbeciles, Perverts, Paupers, Morons, Epileptics and Degenerates. A. J. Oschner, Chicago.—p. 321.
*Conception of Septicemia and Fate of Microbes in Blood Stream. W. Martin, New York.—p. 326.
*Fat Embolism: Two Fatal Cases. A. W. Elting and C. E. Martin, Albany, N. Y.—p. 336.
*Operative Treatment of Angina Pectoris. H. H. Kerr, Washington, D. C.—p. 354.
Acute Massive Collapse of Lungs; Mechanism; Relation to Foreign Bodies in Bronchi and Postoperative Complications. C. Jackson and W. E. Lee, Philadelphia.—p. 356.
Extraction Through Thorax of Projectiles Long Resident in Lung. J. J. Buchanan, Pittsburgh.—p. 390.
*Evaluation of Preoperative and Postoperative Radiation in Treatment of Mammary Carcinoma. B. J. Lee and R. E. Herenden, New York.—p. 404.
*Splenectomy for Purpura Hemorrhagica. M. B. Clopton, St. Louis.—p. 413.

Sequelae of Gastro-Enterostomy. D. C. Balfour, Rochester, Minn.—p. 421.
Primary Carcinoma of Small Intestine in Octogenarian. A. Primrose, Toronto, Ont.—p. 429.
Intussusception in Adults Due to Invagination of Meckel's Diverticulum: Two Cases. W. E. Lower, Cleveland.—p. 436.
Anatomy and Treatment of Reducible Oblique Inguinal Hernia. E. Eliot, Jr., New York.—p. 441.
*Broken-Down Abdominal Incisions: Method of Closure. A. M. Shipley, Baltimore.—p. 452.
Partial Resection of Kidney. E. S. Judd, Rochester, Minn.—p. 458.
Methods of Ureteral Repair and Transplantation. C. H. Mayo, Rochester, Minn.—p. 472.
*Implantation of Ovary. W. L. Estes, Bethlehem, Pa.—p. 475.
Management of Bilateral Ovarian Dermoids. F. S. Mathews, New York.—p. 483.
Treatment of Uterine Fibroids. J. B. Deaver, Philadelphia.—p. 486.
Treatment of Uterine Prolapse and Rectocele by Closure of Pouch of Douglas. J. Holmans, Boston.—p. 501.
*Hanger Method for Repair of Procidentia Uteri. G. W. Crile, Cleveland.—p. 509.

Surgical Treatment of Criminals.—The form of treatment advocated by Oschner consists in the ligation and section of the vasa deferentia.

Septicemia; Fate of Microbes in Blood Stream.—The point emphasized by Martin is that in the generalization of infection a very complex process is going on in the body. The presence of microbes in the blood is but one phase or part of this process. To speak of the blood as infected in the sense that the cellular tissue is infected in a spreading phlegmon is erroneous and misleading. To speak of the blood being sterilized by the intravenous injection of a chemical as a test tube containing a broth culture is disinfected, is equally misleading and erroneous.

Fat Embolism.—The two cases cited by Elting and Martin were both closed fractures. Fat emboli were found at necropsy in virtually all the organs; heart, lungs, liver, kidney, spleen, pancreas, gastro-intestinal tract, suprarenals, seminal vesicles, lymph nodes and brain.

Surgical Treatment of Angina Pectoris.—In eight cases in which Kerr performed the so-called American operation, the left superior sympathetic ganglion was removed. In two cases the operation was repeated on the right side and in one case, at a third seance, the middle cervical and stellate ganglia were also avulsed under local anesthesia. In five cases, complete relief from the angina was obtained, in two partial relief, and in one case no relief. In those cases with still a residue of pain in the form of a substernal ache on exertion or effort, the relief is so great that the patients are restored to subnormal activity and feel immensely repaid for their short stay in the hospital. The permanent results of superior sympathectomy are anesthetization of the area above the oblique scar, from division of the superficial branches of the cervical plexus. There is also produced an enophthalmos and contraction of the pupil on the operated side.

Value of Radiotherapy in Breast Cancer.—Lee and Herendeen are convinced that preoperative and postoperative radiation are of value as an adjunct to surgery in the treatment of carcinoma of the breast. The best results were obtained when both preoperative and postoperative radiation were employed. The end results will be largely determined by the plan of irradiation followed and the dosage employed.

Splenectomy for Purpura Hemorrhagica.—Two children have been splenectomized by Clopton, both of them over fifteen months since, one with such marked improvement that it can reasonably be called a cure; the other with marked improvement, but with occasional hemorrhages that are easily controlled. A more recent case, a woman, 34 years old, has had no reappearance of purpura or hemorrhages since her operation eight months ago.

Resuture of Abdominal Incisions.—Shipley describes a method of closure for broken down abdominal wounds in which interrupted silver wire sutures are used to effect approximation of the wound edges. The wires are tightened a little more each day until the wound edges are healthy when they are contracted and healing occurs quickly.

Implantation of Ovary.—When the oviduct is permanently obstructed Estes exsects the uterine end of the tube and implants the ovary-cut surface into this denuded spot on the uterine horn, thus bringing the ovary into direct contact with the uterine cavity. This method of implantation of ovarian stroma has resulted in pregnancy in over 10 per cent. of the cases.

Hanger Method for Repair of Procidentia Uteri.—Crile removes a wedge-shaped section of the central part of the uterus, the apex extending down to the cervix, leaving a lateral strip of uterus free of mucosa on each side, together with the attachments of the round, the broad, the anterior and the uterosacral ligaments. Bleeding is controlled and the raw surface of each side and across the cervix is covered by suturing. The entire group of organs—the bladder, the rectum, the cervix and the vagina—involved in the descensus may be raised or lowered by these two handles and it remains only to find the anchorage whereby the group may remain permanently elevated by these handles. To this end a short incision is made through the external fascia, muscle and peritoneum, parallel to the original incision but just to the left of the median line as in a Gilliam operation, this opening, however, being made just large enough to draw through it the left "handle" of the descensus complex; the right handle is brought up through the primary incision. Thus the two "strap handles" emerge well up and out of the right and left incisions with a substantial and dependable strip of abdominal wall lying between them. The two handles are crossed over this strip as if to grasp it and are sutured there, thus forming a permanent immovable opponent to further descensus.

Archives of Internal Medicine, Chicago

36: 293-446 (Sept. 15) 1925

*Action of Oils in Production of Tumors. M. T. Burrows and C. G. Johnston, St. Louis.—p. 293.
*Value of Iron in Anemia. C. S. Williamson and H. N. Ets, Chicago.—p. 333.
Vital Capacity in Citizens' Military Training Camp. S. A. White and P. F. McGuire, Washington, D. C.—p. 355.
*Effect of Phenobarbital (Luminal) on Blood Pressure in Arterial Hypertension. III. C. M. Gruber, H. H. Shackelford and A. M. Ecklund, St. Louis.—p. 366.
*Basal Metabolism as Affected by Atmospheric Conditions. W. J. McConnell and C. P. Yagloglou, Pittsburgh.—p. 382.
*Metabolism of Obesity. IV. Distribution of Energy Production After Food. C. C. Wang and S. Strouse, Chicago.—p. 397.
Diseases of Liver. III. Comparative Study of Certain Tests for Hepatic Function in Patients with Obstructive Jaundice. C. H. Greene, C. S. McVicar, L. G. Rowntree and W. Walters, Rochester, Minn.—p. 418.
*Auricles in Cases of Auricular Fibrillation. C. Frothingham, Boston.—p. 437.

Action of Oils in Production of Tumors.—Burrows and Johnston state that cancer is an independent growth of body cells. It may be induced by any one of a number of conditions and substances. Once established, it proceeds independently of these causative agents. An active independent growth of body cells depends on a crowding of the cells together in a stagnant area or an area having a relatively poor blood supply. Cancer has this kind of an organization. It has been found that such an organization can reproduce itself through the fact that it destroys through its growth the normal tissue and blood vessels about it. The action of drops of corn oil and coal tar on the tissue has been investigated. It has been found that they act to build a dense, stagnant mass of cells by drawing the tissue cells to them and away from their intercellular substances and blood vessels. The bacteria that induce cancer act in the same manner to build a densely cellular stagnant mass of cells, but by a different means. They induce such a mass of cells to form by stimulating the cells of the tissue to proliferate without forming to any extent intercellular substances and blood vessels. These factors of stagnation and cell crowding become important for growth because the growth of body cells depends on a certain concentration of a primary product of the oxidation of the cells, the archusia. This substance is soluble in blood. The cells cannot retain it in quantity. Its concentration is at all times under the control of the environment. Function is likewise determined by the environment. Body cells can be made to grow not only through the accumulation of their own archusia, but by adding archusia from outside sources. Function is something that

maintains only in an environment that inhibits an independent growth.

Value of Iron in Anemia.—Williamson and Ets have found that inorganic iron, whether given by mouth, subcutaneously or intravenously, is absorbed and may be found especially in the liver and spleen, but is not converted into hemoglobin. Animals made anemic by one or several large bleedings do not recover any more rapidly when inorganic iron is given in any of these ways. The efficiency of food iron is very pronounced, and animals on a diet containing food iron only recover very rapidly from hemorrhages that remove an amount of iron greater than exists in the entire body outside the blood. In the light of the foregoing experiments, the administration of inorganic iron has no therapeutic value in anemia.

Effect of Phenobarbital on Blood Pressure in Hypertension.—Phenobarbital decreased the arterial blood pressure in 85 per cent. of cases of hypertension in which it was used by Gruber, Shackelford and Ecklund. It appears to become less and less effective in most instances on prolonged administration. It has the same effect on both ambulatory and hospital patients. In moderate doses it has probably no harmful effect on the kidney tissues and on the phenolsulphonephthalein excretion. Immediately with the fall in blood pressure the phenolsulphonephthalein excretion is increased, but later, in some instances, its elimination is diminished. The elimination again returns to its original level after withdrawal of the drug. It produces marked toxic symptoms in large doses and therefore should not be prescribed indiscriminately.

Effect of Atmosphere on Basal Metabolism.—The results of the experiments made by McConnell and Yaglogou lead them to the following conclusions: The rates at which oxygen is consumed and carbon dioxid is produced increase with exposure to either high or low temperatures. There is a zone of minimum metabolic rate between 75 and 83 degrees effective temperature within which basal metabolism should be measured. The metabolic rate increases rapidly when the temperature of the environment is higher than that of the body. Body temperature and pulse rate correlate fairly well with the rate of basal metabolism.

Metabolism of Obesity.—The energy derived from the various nutrients by obese, normal and thin people after the ingestion of meals high in protein, carbohydrate and fat, respectively, was made the subject of the study by Wang and Strouse. There were twenty-six tests on obese subjects, twenty-one on thin subjects and twelve on normals. After the ingestion of protein, obese persons have a tendency to derive their energy from carbohydrate, whereas thin and normal persons use less carbohydrate than during starvation. Calories derived from fat decrease in the obese after the meal, but show little change in the thin and normals. The two latter groups, however, show a decided rise in calories derived from protein after the meal, but the protein consumption is little affected in the obese. This confirms previous findings that there is very little specific dynamic action of protein in obese persons. All subjects derive more energy from carbohydrate after the ingestion of a high carbohydrate meal, and less from fat. Calories derived from protein after this meal vary little, however, in any group from the starvation figures. After the high fat meal all groups show an increase in energy derived from fat. The obese continue to use carbohydrate in greater amounts than the two other groups. The protein consumption shows very little change, especially in the obese and normals. There is no relation between the pulse rate and energy production computed on the basis of heat produced per square meter of body surface. The fact that the obese subjects derive less energy from fat than either the thin or the normals after meals indicates a reason for excessive fat storage.

Auricles in Auricular Fibrillation.—It was evident to Frothingham from a study of cases that there is no typical lesion in the auricles that could be looked on as the cause of auricular fibrillation. A slight degenerative lesion was found in the muscle fibers of the auricles much more frequently with auricular fibrillation than in regularly beating hearts of the same age. It is interesting to speculate whether this lesion was the result of the irregularity of rhythm or a factor in its production, by causing some defect in the conduction of impulses or in the ability of the muscle to respond to the impulses.

Boston Medical and Surgical Journal

193: 617-658 (Oct. 1) 1925

Uremia in Acute Glomerular Nephritis. K. D. Blackfan and B. Hamilton, Boston.—p. 617.
Study of 500 Admissions to Fourth Medical Service, Boston City Hospital. F. W. Peabody, Boston.—p. 629.
Department of Social Work at Boston City Hospital. G. L. Farmer and A. L. Estabrook, Boston.—p. 630.

Uremia in Acute Glomerular Nephritis.—The uremic symptoms in acute glomerular nephritis in children are discussed by Blackfan and Hamilton on the basis of observations made on eleven patients. The form of uremia seen in acute glomerular nephritis in children is characterized by headache, vomiting, visual disturbances, delirium or coma and convulsions. It is always preceded by a steady rise in arterial tension and by visible but not necessarily marked edema. A steady increase of arterial tension is the most reliable indication of approaching uremia. Intracranial tension resulting from edema of the brain is probably the causative factor of the symptoms in this form of uremia. This is suggested by finding an edematous brain at necropsy and the relief afforded by treatment favoring a decrease of cerebral edema. Arterial hypertension is probably the result of increased intracranial pressure. The intravenous injection of 1 per cent. solution of magnesium sulphate together with the administration of large doses of the salt by mouth and by rectum has been found to be effective in the treatment of this form of uremia. The intravenous injection should be repeated if necessary at twelve to twenty-four hour intervals until the blood pressure remains at a low level and the cerebral symptoms have subsided. Intravenous treatment is not effective during the medullary cone phase or in the terminal stages. Lumbar puncture should be used guardedly in order to avoid incarceration of an edematous brain in the foramen magnum. The term uremia is misleading as the symptoms are not dependent on the retention of nitrogenous end products. It is suggested that the characteristic symptoms with arterial hypertension be referred to as the cerebral symptoms of acute glomerular nephritis.

Canadian Medical Association Journal, Montreal

15: 883-988 (Sept.) 1925

Surgical Treatment of Gastric and Duodenal Ulcer. H. W. Carson, London, Eng.—p. 883.
Rheumatoid Arthritis. H. Rolleston, London, Eng.—p. 899.
Tumors of Large Bowel. A. Primrose, Toronto.—p. 897.
Primary Papillary Epithelioma of Ureter. H. D. Morse, Rochester, Minn.—p. 902.
*New Technic in Application of Thiersch Skin Grafts. D. McLellan, Vancouver, B. C.—p. 908.
*Calcium and Potassium Chlorids in Treatment of Arterial Hypertension. W. L. T. Addison and H. G. Clark, Toronto.—p. 913.
Peripheral Nerve Injuries. F. H. Mackay, Montreal.—p. 915.
Biliary Disease as Seen in General Practice. F. N. G. Starr, Toronto.—p. 922.
Bladder Neoplasms. D. W. MacKenzie, Montreal.—p. 926.
Infectious Arthritides. A. M. Forbes and L. Rhea, Montreal.—p. 931.
Rectal Anesthesia in Obstetrics. J. D. Graham, Toronto.—p. 935.
Cancer of Larynx; Thirty-One Cases. A. A. Campbell, Toronto.—p. 939.
Deficiency Diseases of Children. F. F. Tisdall, Toronto.—p. 904.
Arrest of Syphilitic Optic Atrophy by Cisternal Injection of Mercury. N. Viner and S. O. McMurty, Montreal.—p. 910.
Maternal Mortality. H. MacMurchy, Ottawa.—p. 941.
*Intracranial Dermoid Cyst. J. M. McEachern, Toronto.—p. 942.
Spontaneous Pneumoperitoneum. M. R. MacCharles, Winnipeg.—p. 943.
Infected Thrombus. J. M. Vaughan, Montreal.—p. 945.

Application of Thiersch Skin Grafts.—The technic used by McLellan in the case of a small boy with an extensive burn of the anterior medial and lateral aspects of the thigh, was as follows: A strip of zinc oxid adhesive plaster, 1 inch wide and long enough to go completely across and adhere firmly to the skin on both sides of the raw area, was laid, with adhesive side up, on a sterile towel. Six or eight thicknesses of gauze, 1 inch wide and long enough to go completely across the wound, were cut and applied lengthwise to the center of the adhesive plaster strip. With a sterile applicator, a thin layer of sterile petrolatum was applied to the surface

of the gauze. Thiersch grafts were taken in the usual way and applied, raw side up, to the greasy surface of the gauze. Taking the adhesive by both ends, the graft was thus applied to the raw area, the adhesive being stuck firmly to the good skin on each side of the wound. This was left in position for eight days, at the end of which time the adhesive plaster was clipped at the junction of the raw surface and the good skin. Having turned the adhesive and gauze strips back carefully, the graft was found to be adherent to the raw surface.

Calcium and Potassium Chlorid in Treatment of Arterial Hypertension.—Addison and Clark assert that calcium and potassium chlorids will produce a decided fall in blood pressure in a large parcentage of cases of hypertension with a coincident improvement of the patient's symptoms. Edema will improve and disappear under their action. The treatment must be persisted in for three or four weeks to get results. From 90 to 180 grains should be given daily. The only serious objection is the possibility of producing symptoms of an inorganic acidosis.

Intracranial Dermoid Cyst.—A congenital inclusion dermoid of the posterior fossa of the cranium is reported by McEachern. The cyst contents consisted of a soft material containing many hairs but no other organized structures. This anomaly was associated with a double ureter.

Journal of Laboratory and Clinical Medicine, St. Louis

10: 965-1068 (Sept.) 1925

*Pulpless Tooth from Bacteriologic and Experimental Standpoint. R. L. Haden, Kansas City, Mo.—p. 965.
*Parathyroid Glands and Their Iodin Content. A. M. Hjort, O. M. Gruhzit and A. G. Flieger, Detroit.—p. 979.
Narcotic and Toxic Potency of Aliphatic Alcohols on Rabbits. J. C. Munch and E. W. Schwartze, Washington, D. C.—p. 985.
*Tissue Autolysis in Vivo. III. Spleen. E. C. Mason, E. C. Davidson and C. W. Matthew, Detroit.—p. 997.
Effect of Potassium Oxaline on Blood Sugar Determinations. H. J. John, Cleveland.—p. 1000.
Possible Source of Error in Use of Russell's Double Sugar Medium. W. P. Belk and M. Duff, Bryn Mawr, Pa.—p. 1005.
*Laboratory Diagnosis in Throat Infections. II. Direct Smear. C. C. Young and M. Crooks, Lansing, Mich.—p. 1007.
Contributing Cause of Turbidity of Nesslerized Solutions in Determination of Urea in Whole Blood. F. B. Cooper, Trudeau, N. Y.—p. 1012.
*Kahn Reaction for Syphilis. II. Specificity of Test. H. L. Keim, Ann Arbor, Mich., and R. L. Kahn, Lansing, Mich.—p. 1013.
*Hemoglobin and Iron in Blood. G. E. Sackett, Kansas City, Mo.—p. 1018.
Comparative Heat Resistance of Serums in Kahn and Wassermann Tests. P. L. Kendrick, Lansing, Mich.—p. 1020.
Effect of Some Guanidine Derivatives and Other Related Substances on Blood Sugar of Normal Rabbits. H. E. Dubin and H. B. Corbitt, New York.—p. 1023.
Value of Early Wassermann Examinations in Diagnosis of Venereal Lesions. R. G. Owen and H. E. Cope, Detroit.—p. 1026.
Hematrocrit Method. C. M. Van Allen, New York.—p. 1027.
Apparatus for Determination of Low Concentrations of Chlorin in Chlorin-Air Mixtures. J. H. Yoe, Charlottesville, Va.—p. 1041.
Aids to Urinalysis in Large Hospital. C. Pons and E. B. Krumbhaar, Philadelphia.—p. 1046.
Device for Saving Supernatant Fluids. F. A. Wiggers, Toledo, Ohio.—p. 1049.

Pulpless Teeth.—Haden asserts that a very high percentage of teeth that are negative in the roentgenogram harbor infection. A fairly large percentage of teeth which were positive in the roentgenogram did not harbor any infection or sufficient infection to be a factor in systemic disease at the time the culture was taken. In such cases, the infection has probably run its course and become bacteria free, just as happens in infections elsewhere in the body. The periapical tissues of a certain percentage of pulpless teeth, either positive or negative in the roentgenogram, are sterile when cultured in glucose brain broth. This does not prove that such are really sterile, since some other method of culture might reveal organisms. The findings suggest, however, that a pulpless tooth is not necessarily infected. The bacteria concerned in chronic foci are quite pathogenic, as judged by their ability to produce lesions in animals on intravenous injection. In selected cases, one can prove an unmistakable tendency of bacteria from chronic foci to localize in certain parts of the body. These cases afford valuable experimental proof of a causal relation of a chronic focus to systemic disease.

Iodin Content of Parathyroids.—Parathyroid preparations made from the external bovine glands by Hjort, Gruhzit and Flieger were not contaminated with thyroid tissue. The iodin content of the parathyroids is of no greater magnitude than that of the ovaries, pituitary and thymus. The iodin found in these glands probably represents the normal distribution of that substance throughout the body tissues.

Autolysis of Spleen in Vivo.—Autolysis of the spleen free within the abdominal cavity has been accompanied by death in 50 per cent. of the animals studied by Mason, Davidson and Matthew. Death from spleen autolysis has not followed so soon after operation as death from liver autolysis, the earliest death being thirty-six hours after sectioning the spleen. It is suggested that the spleen either does not undergo as rapid autolysis as the liver tissue or that the toxic material liberated is not so potent. Apparently the blood chemistry is but little altered in the animals which survive sectioning of the spleen, while those dying following the operation show some changes. The analysis of the abdominal fluid present at death due to spleen autolysis shows the nonprotein nitrogen constituents are essentially the same as in those cases of death due to liver autolysis.

Laboratory Diagnosis of Throat Infections.—A report of the findings on direct examination of throat swabs is presented by Young and Crooks. Smears made from swabs mailed to the laboratory showed diphtheria-like bacilli in about 60 per cent. of the positive cultures. The organisms of Vincent were found in many cases which were clinically confused with diphtheria. Smears from both the swabs and cultures were stained with Loeffler's alkaline methylene blue and a diagnosis made on staining reaction, morphology and arrangement.

Kahn Test for Syphilis.—A series of 2,500 cases, clinically free from syphilis, were studied by Keim and Kahn with the Kahn precipitation test. Negative reactions were obtained in 2,493 cases; 1 plus reactions were obtained in four cases; 2 plus reactions in two cases; and a 3 plus reaction in one case. These results indicate that the Kahn test possesses a high degree of specificity for syphilis.

Hemoglobin and Iron in Blood.—Sackett attempted to compare the percentage of hemoglobin found by Newcomer's method with the grams of hemoglobin present, and also to help establish a normal hemoglobin standard expressed in grams per hundred cubic centimeters corresponding to a five million red cell count. One hundred per cent. hemoglobin by Newcomer's method represents 16.4 gm. of hemoglobin per hundred cubic centimeters of whole blood. The normal standard corresponding to a five million red cell count is 16.4 gm. hemogobin per hundred cubic centimeters of whole blood.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

26: 83-186 (Sept.) 1925

*Effect of Ephedrine on Experimental Shock and Hemorrhage. K. K. Chen, Peking, China.—p. 83.
Toxic Effect of Certain Alcoholic Beverages for the Kidney of Normal and Naturally Nephropathic Dogs. W. DeB. MacNider, Chapel Hills, N. C.—p. 97.
Studies of Intoxication. VII. Effect of Caffein. B. M. Davidson, Aberdeen, Scotland.—p. 105.
*Experimental Study of Certain Benzyl Compounds; Importance of Substitution in Benzyl Nucleus and Significance of the Side Chains. H. H. Jensen, Minneapolis.—p. 123.
*Action of Spartein Sulphate on Mammalian Heart. J. H. Crawford, Edinburgh.—p. 171.

Ephedrin in Shock.—Chen states that ephedrin raises blood pressure in hemorrhages and in experimental shock induced by histamin, peptone, anaphylaxis or surgical manipulation. The rise in blood pressure is permanent under favorable conditions and this effect of the drug is due to increased cardiac output and not to arterial constriction. Ephedrin fails to act when the heart beat becomes impaired, or respiration ceases, or the degree of shock is too extensive, or when hemorrhage exceeds 25 per cent. It has, however, no harmful effects.

Study of Benzyl Compounds.—Jensen's review and experimental studies of benzyl compounds suggest the following

conclusions as to the importance of the various chemical groups in the benzyl nucleus: Introduction of a carbinol group decreases the toxicity and physiologic activity of phenol and aldehyd benzyl compounds. The position of the carbinol group in the molecule appears to be of some importance for the local anesthetic properties of the compound. The carbinol group seems to be the chief anesthesiophore group in benzyl compounds. The introduction of a carbinol group reduces the anthelmintic action of phenolic compounds. Bactericidal properties of benzyl compounds carry with the side chain groups in the following order, beginning with the most effective: phenol group, aldehyd group and the carbinol group. Anthelmintic properties of benzyl compounds are dependent on the side chain groups for their activity similarly to the bactericidal properties. Specific physiologic actions cannot be ascribed only to a definite chemical group. There is some suggestion that the physiologic activity of benzyl compounds depends on the number of hydrogen atoms in the benzyl nucleus. Pharmacologic actions seem to correspond to the most active chemical group in the molecule, i. e., the aldehyd action predominates in the alcohols of salicylaldehyd and *p*-oxybenzaldehyd.

Spartein Sulphate in Auricular Fibrillation.—Crawford found that spartein sulphate in appropriate dosage can cause cessation of auricular fibrillation induced by faradic stimulation of the dog's auricle. It does this probably by virtue of its depressant action on heart muscle. The power of stopping fibrillation of the auricle is not peculiar to one individual drug or group of drugs, but may be common to those drugs which depress the activity of cardiac muscle.

Laryngoscope, St. Louis

35: 657-734 (Sept.) 1925

Vestibular Tests in Intracranial Conditions. L. Fisher, Philadelphia.—p. 657.
Herpes Zoster Oticus: Involvement of Fifth, Seventh, Eighth and Ninth Cranial Nerves; Complete Vestibular Examination. F. L. Dennis, Colorado Springs.—p. 665.
Roentgen-Ray Examination in Mastoiditis. S. G. Dabney, Louisville, Ky.—p. 675.
Chronic Purulent Otitis Media with Several Intracranial Complications. B. H. Shuster, Philadelphia.—p. 680.
Optic Neuropathy and Spheno-Ethmoid Disease. C. M. Miller, Richmond, Va.—p. 687.
Catarrh or Sinusitis. N. P. Stauffer, Philadelphia.—p. 697.
Membranous Pharyngitis, Laryngitis and Tracheitis Following Roentgen-Ray Treatment of Cervical Adenitis. M. C. Myerson, New York.—p. 703.
Local Anesthesia in Tonsillectomy. W. H. Barnes, Philadelphia.—p. 706.
Infected Tonsils as Cause of Thyrotoxicosis. H. T. Bailey, Phoenix, Ariz.—p. 711.
Bronchoscopic Syringe. R. M. Lukens, Philadelphia.—p. 716.
Bronchoscopic Specimen Collector. R. M. Lukens, Philadelphia.—p. 717.

Medical Journal and Record, New York

72: 369-436 (Oct. 7) 1925

Diagnostic Value of Roentgen-Ray Examination of Gallbladder After Intravenous Injection of Tetraiodophenolphthalein. W. C. Barker, Philadelphia.—p. 369.
Roentgen-Ray Diagnosis of Duodenal Ulcer. V. Knapp, New York.—p. 373.
Rôle of General Practitioner in Modern Mental Hygiene Movement. I. J. Sands, New York.—p. 376.
Implants with Cannula in Treatment of Atrophic Rhinitis. C. C. Miller, Chicago.—p. 381.
Rhinitis. J. Daley, New York.—p. 383.
Droop Shoulders in Adults; Twelve Cases. J. C. Wilson, Hartford, Conn.—p. 386.
Artificial Leukocytes. B. Ferguson, Rotterdam, Holland.—p. 388.
Influence of Physical Disorders on Behavior. I. S. Wile, New York.—p. 391.
American Stomatological Movement in International Activities. A. J. Asgis, New York.—p. 393.
Surgeon's Heritage and Outlook. H. A. Royster, Raleigh, N. C.—p. 395.
Extrapleural Thoracoplasty in Pulmonary Tuberculosis; Sixty Cases. W. H. Thearle, Denver.—p. 399.
Congenital Cleft Lip. T. F. Mullen, Pocatello, Idaho.—p. 402.
Surgical Treatment of Echinococcosis. H. W. Mills, San Bernardino, Calif.—p. 407.
Oscillogram. C. Finck, Vittel, France.—p. 411.
How to Dry and Clean Hypodermic Needles. W. M. Brunet, Brooklyn.—p. 414.
Rectal Irrigations in Treatment of Prostatitis. B. Rose, New York.—p. 414.
Haller and Some Bygone Observations in Pathology. D. Power, London.—p. 415.

Oklahoma State Medical Association Journal, Muskogee

18: 203-228 (Sept.) 1925

Surgical Treatment of Puerpural Eclampsia. E. B. Dunlap, Lawton.—p. 203.
Diphtheria; Advantages of Intravenous Administration of Antitoxin. J. A. Haynie, Durant.—p. 205.
Pernicious Vomiting. E. P. Allen, Oklahoma City.—p. 209.
Rectal Examination in Labor. W. A. Dean, Tulsa.—p. 211.

Philippine Islands Medical Association Journal, Manila

5: 211-250 (Aug.) 1925

Consolidation of Health Agencies in Philippine Islands. P. Laygo.—p. 211.
Potency of Different Kinds of Vaccine Virus Used in Philippines. L. L. Rizal and P. Joven.—p. 214.
Tuberculosis Problem in Philippines. J. S. Fernando.—p. 226.

South Carolina Medical Association Journal, Greenville

21: 207-215 (Sept.) 1925

Darkfield Examinations; Public Health Measure. F. M. Routh, Columbia.—p. 207.
Benign Giant Cell Bone Tumors. J. R. Rhame and A. R. Taft, Charleston.—p. 209.
Puerperal Infection. L. A. Wilson, Charleston.—p. 215.

Southern Medical Journal, Birmingham, Ala.

18: 635-706 (Sept.) 1925

*Aphasias of Childhood: Congenital Word-Blindness and Deafness as Causes of Mental Retardation and Deviation. E. B. McCready, Pittsburgh.—p. 635.
*Use of Oxygen by Body in Health and Disease. G. C. Robinson, Nashville, Tenn.—p. 646.
*Agglutination of Proteus Group of Bacilli by Human Serums. H. M. Weeter and L. J. Motyca, Louisville.—p. 650.
*Basophilic Leukocytosis in Experimental Syphilis of Rabbit. G. S. Graham, Birmingham, Ala., and W. K. Grigg, Albany, N. Y.—p. 653.
Gastric Analysis as Function Test. F. D. Gorham, St. Louis, Mo.—p. 661.
Food Diary. T. W. Murrell, Richmond, Va.—p. 664.
*Hookworm Reinfestation in Sanitated and Unsanitated Areas. R. B. Hill, San Juan, P. R.—p. 665.
Hookworm Infestation in Jones County, Mississippi, 1924. H. H. Howard, West Indies.—p. 668.
*New Use of Fluoroscope in Litholapaxy. A. E. Goldstein, Baltimore.—p. 673.
Traumatic Rupture of Urinary Bladder; Two Cases. C. G. Hoffman, Louisville, Ky.—p. 680.
*Perpendicular Incision as Uniform Approach in Both Inguinal and Femoral Herniorrhaphy. A. B. Carney, Fort Smith, Ark.—p. 685.
Stricture of Gallbladder; Case. C. F. Horine, Baltimore.—p. 685.
Paranasal Sinus as Focus of Infection in Children. E. C. Mitchell, Memphis.—p. 686.
Laryngeal Diphtheria; Three Cases. V. K. Hart, Statesville, N. C.—p. 693.
Method of Promoting Students and Effect on Student Body. Stuart Graves, Louisville, Ky.—p. 696.

Aphasias of Childhood.—McCready urges that knowledge of the occurrence, prevalence and importance of aphasic conditions in children should prevail more extensively among those coming in contact with children during their early school years in order that these cases may be differentiated from the actually defective in intelligence and that the proper remedial measures may be applied. Isolated defects and disabilities of varying degree in the zone of language are a frequent cause of interference with the educational progress of the individual and of undesirable affective states leading to serious temperamental, character and behavior difficulties. In some instances the defect may be so extreme in degree and in its results as to lead to the conviction that the individual is markedly defective in general intelligence unless a careful analysis is made.

Use of Oxygen by Body.—Robinson states that the administration of oxygen is of no avail in congenital heart disease, nor is it indicated by cyanosis of cardiac origin when the lungs are comparatively clear. The chronic cyanosis of emphysema can also only be temporarily relieved by oxygen. It is in the acute failure of the lungs to furnish the blood with an adequate supply of oxygen in which oxygen administration is especially called for. The presence of anemia or of heart failure emphasizes the importance of adequate ventilation of the blood, and it is the combination of acute pul-

monary failure that takes place in pneumonia and pulmonary embolism, together with inadequate ability for compensation by the heart and blood that call especially for the therapeutic use of oxygen. Oxygen may also be of service when heart failure occurs in patients with chronic emphysema. Robinson emphasizes that it is not the spasmodic use of oxygen that is of value. The gas should be administered over hours or days, and when properly arranged, need not interrupt sleep. Its rational use should be encouraged, as it tends to combat one of the fundamental causes of death, and when properly administered in suitable cases, it may relieve distressing symptoms.

Blood Serum Agglutination of Proteus Bacilli.—The study by Weeter and Motyca showed that human serums from the patients with no known history of proteus infections agglutinated *Proteus X* 19 both early and completely in dilutions which have been described by previous workers as indicative of typhus fever in the early stages. The highest dilution recorded giving positive agglutination with normal serum was 1:200. Proteus bacilli were isolated from six of ten specimens of stools and three of ten specimens of urine from seventeen different patients whose serums agglutinated *Proteus X* 19 in higher dilutions. These differed from *Proteus X* 19 in gelatin liquefaction and in their behavior toward *Proteus X* 19 immune serum. A culture of *Proteus vulgaris* and one of *Proteus mirabilis* were not agglutinated so readily or in such high dilutions by certain of the foregoing serums as was *Proteus X* 19.

Basophilic Leukocytosis in Experimental Syphilis.—Unusual degrees of total and relative basophilic leukocytosis were observed by Graham and Grigg during the course of a study of experimental syphilis in the rabbit. The basophils reached levels of 25 to 35, and, in one instance, 39 per cent. of the total leukocytes. Explanation for such basophilic leukocytosis is not complete on the basis of the work reported. The most constant factor in its production appeared to be the presence of active syphilitic infection. The reaction is interpreted as the result of degenerative changes in the hematopoietic tissues.

Hookworm Reinfestation.—Two areas in different parts of Porto Rico were treated for hookworm disease, and a year later were resurveyed. The first area, situated in an untreated, unsanitated section of the island, was treated without preliminary or subsequent sanitation of either the area itself or the surrounding territory. In the second area, latrines were constructed at all houses of it and the surrounding territory some time before treatment. Treatment also included the territory affecting the area. In the first area the intensity of infestation was reduced approximately 84 per cent. while it was reduced 97 per cent. in the second area. Resurvey one year later showed reinfestation universal in the first area, with the intensity half that of the previous year. In the second area almost half the inhabitants harbored hookworms, but the intensity was only 12 per cent. that of the previous year. The conditions causing this difference in degree of reinfestation are discussed by Hill.

Use of Fluoroscope in Litholapaxy.—Goldstein combines litholapaxy with fluoroscopy in an air medium. The method has been reported previously, but some changes in technic and the operation of additional cases are detailed in this paper.

Incision for Femoral and Inguinal Herniorrhaphy.—The incision advocated by Carney is from 3 to 5 inches in length and about 2½ inches from the midline of the body. The upper end of the incision is on a line with or slightly below the level of the anterior superior iliac spines; and the lower end crosses Poupart's ligament at the junction of the middle and lower third of the ligament. This gives a free exposure of the conjoined tendon and external oblique fibers. By slightly undermining the lower border of the inner flap, the spermatic cord can be picked up. By undermining the outer flap the fibers of the exterior oblique can be exposed to any desired extent. The incision is such that Poupart's ligament is exposed without undue traction and the necessary repair is completed as easily as in the customary incision. Using the same incision, with Poupart's ligament readily exposed, it is an easy matter to do an inner repair for femoral hernia.

Southwestern Medicine, Phoenix, Ariz.

11: 335-359 (Sept.) 1925

Cancer; Value of Radiation in Malignancies of Breast and Uterus. J. W. Cathcart, El Paso, Texas.—p. 335.
Municipal Milk Control. J. R. Scott, Albuquerque, N. M.—p. 340.
Blood Matching for Transfusion. L. Yater, Cleburne, Texas.—p. 345.
Chronic Appendicitis. H. Snure, Los Angeles.—p. 347.
Tack in Lung Six Years Removed by Bronchoscopy. W. E. Vandevere, El Paso, Texas.—p. 349.
Pemphigus Vegetans. A. M. Washburn, Gamerco, N. M.—p. 350.
Congenital Valve Formation in Posterior Urethra. W. G. Schultz, Tucson, Ariz.—p. 352.
Therapeutic Action of Anilin Dyes, Especially in Infectious Diseases. P. Gallagher, El Paso, Texas.—p. 355.
Draining Abdominal Wounds. R. A. Hernandez, Tucson, Ariz.—p. 359.

Texas State Journal of Medicine, Fort Worth

21: 275-334 (Sept.) 1925

*Mild Typhus (Brill's Disease) in Lower Rio Grande Valley. K. Maxcy, Washington, D. C.—p. 282.
Ultraviolet Light: Case Showing Photosensitization. C. F. Lehman, San Antonio.—p. 286.
Nonmalignant Uterine Neoplasms; Radium Treatment. O. L. Norsworthy, Houston.—p. 289.
Gynecologic Problems. E. Dunlap, Dallas.—p. 292.
Treatment of Functional Dysmenorrhea. C. V. Ezell, Cleburne.—p. 296.
Experiences with Mercurochrome. L. K. Patton, Amarillo.—p. 302.
Intestinal Anastomosis by Rapid Suture Clamp. A. C. Scott, Jr., Temple.—p. 303.
Cause and Prevention of Postoperative Gas Pains. S. P. Cunningham, San Antonio.—p. 306.
Differential Diagnosis of Chronic Pulmonary Tuberculosis. A. E. Greer, Houston.—p. 308.
Congenital Hypertrophic Pylorie Stenosis. E. E. Francis, Memphis, Tenn.—p. 312.
Cases of Uveitis; Etiology. F. H. Newton, Dallas.—p. 315.
Choroiditis: Resulting from Diseased Ethmoids and Sphenoids. E. H. Vaughn, Tyler.—p. 318.

Mild Typhus in Rio Grande Valley.—Mild typhus (Brill's disease)—perhaps a permanently attenuated strain—is endemic in the lower Rio Grande Valley and has been there for some years, occurring sporadically, not attaining a very wide spread, and largely passing unrecognized under the name of paratyphoid fever, Rio Grande fever, etc. Maxcy regards it as not unlikely that *Pediculus humanus* var. *capitis* may be the vector responsible for the transmission of these cases.

Virginia Medical Monthly, Richmond

52: 337-404 (Sept.) 1925

Treatment of Epithelioma of Face and Eyelid. C. A. Simpson, Washington, D. C.—p. 337.
Case of Situs Transversus. L. T. Royster, University.—p. 340.
Vaginal Anus; Case; Operation; Cure. H. W. Cave, New York.—p. 342.
Hysterectomy. C. R. Ronins, Richmond.—p. 347.
Dental Sepsis; Crown and Bridge Work. C. P. Jones, Newport News.—p. 350.
Some Solved and Unsolved Problems of Internal Medicine. A. G. Brown, Jr., Richmond.—p. 352.
Intraperitoneal Transfusion; Two Cases. C. E. Conrad, Harrisonburg.—p. 360.
Early Surgical Intervention in Prostatic Hypertrophy. W. C. Stirling, Washington, D. C.—p. 362.
Sciatica Treated by Epidural Injection. W. B. Marbury, Washington, D. C.—p. 366.
Surgery of Gallbladder and Ducts. L. D. Keyser, Roanoke.—p. 369.
Sinusitis in Children. H. R. Etheridge, Norfolk.—p. 373.
Fractures About Elbow Joints. J. L. Wright, Harrisonburg.—p. 374.
Cancer Plus Suggestions Based on Suggestive Experiment. S. Harnsberger, Warrenton.—p. 375.
Surgical Relief of Certain Painful Conditions. H. H. Kerr, Washington, D. C.—p. 378.
Rôle of Nutrition in Tuberculosis Prevention. A. D. Randolph, Richmond.—p. 381.
Analysis of Eighty-Four Deliveries. H. Neifield, Brooklyn.—p. 384.

West Virginia Medical Journal, Huntington

21: 449-504 (Sept.) 1925

Some Transatlantic Observations. F. L. Hupp.—p. 449.
Diagnosis and Treatment of Ureteral Stricture. W. S. Robertson, Charleston.—p. 453.
Pre-Operative and Post-Operative Care of Cases in Abdominal and Pelvic Surgery. C. R. Ogden, Clarksburg.—p. 458.
Surgical Drainage of the Abdomen. B. S. Brake, Clarksburg.—p. 466.
Indications and Technic for Removal of Excessive Subcutaneous Abdominal Fat. A. P. Heineck, Chicago.—p. 475.
Diagnosis and Treatment of Common Scalp Diseases. L. G. Beinhauer, Pittsburgh.—p. 480.
Papilloma of Bladder; Two Cases. C. F. Fisher, Richwood.—p. 487.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

37: 347-400 (Sept.) 1925

Lymphadenoma with Erythrodermia. J. M. H. MacLeod.—p. 347.
Aleukemic Leukemia with Multiple Skin Tumors. J. A. Drake.—p. 354.
*Abnormalities of Blood Sugar Content in Eczema. H. Haldin-Davis and L. Wills.—p. 364.

Blood Sugar in Eczema.—A study of twenty cases of eczema by Haldin-Davis and Wills has shown that cases of eczema in patients who are not suffering from diabetes are often (apparently in about 66 per cent. of the total number) associated with some abnormality of the blood sugar level. This abnormality may consist either (1) in an abnormally high blood sugar content during starvation, (2) in the appearance of abnormally high amounts of sugar in the blood soon after the ingestion of glucose; and moreover, these high amounts may either disappear quickly or be slow in departure. These abnormalities in the blood sugar are not associated with any particular type of eczema. Blood sugar abnormalities seem more likely to be found when the eczema is widespread and there is a good deal of edema of the skin, but this is not an invariable rule by any means. Furthermore, the dietetic treatment of eczema in patients who are not prone to obvious excesses in one direction or another is unsatisfactory.

British Medical Journal, London

2: 499-546 (Sept. 19) 1925

Therapeutic Value of Light. I. W. E. Dixon.—p. 499.
Id. II. Clinical Aspect. C. E. M. Jones.—p. 500.
Id. III. Phototherapy in Dermatology. G. H. Lancashire.—p. 502.
Uses of Posture for Bronchial Drainage. N. Neild.—p. 504.
Ocular Pain. A. F. Fergus.—p. 506.
Treatment of Ocular Syphilis. R. L. Rea.—p. 509.
Conservative Treatment of Glaucoma. J. Burdon-Cooper.—p. 510.
Some Things I Do Not Know. A. S. Percival.—p. 513.
Narcotic Effects of Two Hyocins (Scopolamins). J. C. Moir.—p. 514.
Ectopic Kidney Containing Massive Calculi. H. P. W. White.—p. 516.
Simple Method of Defibrinated Blood Transfusion. E. F. Skinner.—p. 516.
Periodic Swelling of Salivary Glands. F. W. Burton-Fanning.—p. 517.
Calculus in Testes. G. R. Tambe.—p. 518.
Removal of Parotid Tumor Without Ligature. G. M. Chapell.—p. 518.
Rectal Etherization in Suitable Cases. C. L. G. Chapman and D. McLellan.—p. 518.
*Ectopic Gestation. G. B. Oliva.—p. 518.
*Acute Thyroidism Following Ligation. F. W. Gifford Nash.—p. 519.

Double Ectopic Gestation.—In the case reported by Oliva an ovarian gestation about 26 weeks old was found on the right side, and a tubal gestation about 8 weeks old on the left. The woman complained of a tumor, abdominal discomfort, loss of weight, occasional pyrexial chills, constipation and amenorrhea for eleven months. Two months earlier she had had a bloody discharge from the vagina, accompanied by much pain on the left side of the abdomen; she believed this to be a return of menstruation, but she had no period in the following month. She had noticed the tumor some six months previously; the swelling had progressively increased in size from that time, but had ceased growing latterly. She was never inconvenienced in any way, apart from the natural sensation of weight caused by the tumor itself. A median laparotomy was performed. The tumor on the right side was unquestionably an ovarian pregnancy, which had grown between the two layers of the broad ligament. The relation of the tube to the sac wall seemed to prove this, besides the total absence of ovarian tissue on that side. The interesting points in the case are: the long duration of the gestation, the lack of distinctive symptoms, and the impregnation of the opposite tube, which caused the patient to seek medical advice.

Acute Thyroidism Following Ligation of Superior Thyroid Artery.—Nash reports a case of acute thyroidism following ligation of the superior thyroid artery for a large vascular goiter and extreme exophthalmos. The patient recovered.

Edinburgh Medical Journal

32: 441-500 (Sept.) 1925

Development of Therapeutics. D. M. Lyon.—p. 441.
Mental Invalids. I. Body-Mind. C. C. Easterbrook.—p. 460.
Case of Cerebral Hemorrhage with Glycosuria in Child Aged 4 Years. D. G. E. Potter and A. R. MacGregor.—p. 482.

Indian Journal of Medical Research, Calcutta

13: 1-204 (July) 1925

Significance of Splenic Index in Kala-Azar Endemic Areas. J. D. Price and C. Strickland.—p. 1.
Buffered Solution for Perfusion of Isolated Organs. R. N. Chopra and S. Ghosh.—p. 7.
*Cephalandra Indica (Telakucha) in Diabetes. R. N. Chopra and J. P. Bose.—p. 11.
Chemotherapy of Antimonial Compounds in Kala-Azar Infection. XV. Certain Derivatives of P-Amino-Phenyl-Stibinic Acid. U. N. Brahmachari and J. Das.—p. 17.
Id. XVI. Blood Culture of Kala-Azar Patients on NNN Medium. I. Comparative Value of Peripheral Blood Culture, Spleen Blood Culture and Spleen Puncture in Diagnosis of Kala-Azar. II. Period at Which Sterilization of Peripheral Blood Takes Place During Treatment with Urea Stibamine. U. N. Brahmachari and B. B. Maity.—p. 21.
*Clinical Method for Estimation of Amount of Quinin in Medicinal Solutions. J. A. Sinton.—p. 25.
*Bodies Resembling Hemogregarines Found in Smears of Human Blood. J. A. Sinton.—p. 29.
Working of Slow Sand Filters. V. G. Raju.—p. 33.
*Normal Sugar Content of Blood and Sugar Tolerance Test. S. L. Bhatia and G. Coelho.—p. 41.
Bacteriologic and Laboratory Technic; Microscope. W. F. Harvey.—p. 53.
Anesthesia Produced by Intra-Arterial Injection of Apothesine. J. P. Arland.—p. 95.
Some Indian Species of Genus Phlebotomus. XIV. Hypopygium of Female Phlebotomus. J. A. Sinton.—p. 97.
Effect of Liquor Formaldehyd on Snake Venom. II. Diminution of Toxicity of Daboia Venom. C. De C. Martin.—p. 109.
Chemotherapy of Antimonial Compounds in Kala-Azar Infection. XVII. Preparation of Urea Stibamine. U. N. Brahmachari.—p. 111.
Effect of Storage on Potency of Antivenomous Serum. L. A. P. Anderson and J. F. Caius.—p. 113.
Bactericidal Power of Blood of Rats as Measure of Their Immunity to Plague. R. H. Malone and B. P. B. Naidu.—p. 121.
Incidence of Kala-Azar on Pusa Estate. D. F. Michael.—p. 131.
Bodo Philebotomi (Herpetomonas Phlebotomi) (Mackie 1914). H. E. Shortt.—p. 141.
*Experiments to Decide Whether Bed Bug (Cimex Hemiptera, Fabr.) Can Transmit Indian Kala-Azar. H. E. Shortt and C. S. Swaminath.—p. 143.
*Systemic Infection of Monkey (Macacus Rhesus) by Intradermal Inoculation of Spleen Puncture Material from Case of Indian Kala-Azar. H. E. Shortt and C. S. Swaminath.—p. 149.
*Infection of Monkey (Macacus Rhesus) with Parasite of Indian Kala-Azar Following Introduction of Infective Material Into Lumen of Small Intestine. E. D. W. Greig and S. R. Christophers.—p. 151.
Feeding of Sandflies (Phlebotomus Argentipes) on Cases of Indian Kala-Azar. S. R. Christophers, H. E. Shortt and P. J. Barraud.—p. 159.
Temperature in Relation to Culture of Herpetomonas Donovani on NNN Medium. S. R. Christophers, H. E. Shortt and P. J. Barraud.—p. 167.
*Effect of Epinephrin Injections on Wassermann Reaction of Normal Subject. L. A. P. Anderson and J. A. Sinton.—p. 173.
Culicoides and Kala-Azar in Assam. S. R. Christophers, H. E. Shortt and P. J. Barraud.—p. 175.
Effect of Salt Solutions of Different Concentrations on Parasite of Indian Kala-Azar. S. R. Christopher, H. E. Shortt and P. J. Barraud.—p. 177.
Selective Mediums for Gonococcus and Pneumococcus. N. Lal.—p. 183.
Phenol as Sterilizing Agent for Bacterial Antigen. N. Lal.—p. 187.
Viability of Bacterial Cultures. II. N. Lal.—p. 189.
Stability of Solid Calcium Hypochlorite. H. H. King.—p. 191.
Kala-Azar in Ramnad District of Madras Presidency. T. S. Balasubramanian.—p. 195.
Concentration of Quinin in Circulating Blood. H. W. Acton and R. N. Chopra.—p. 197.

Cephalandra Indica in Diabetes.—Telakucha (Cephalandra indica) has the reputation in Bengal of having a remarkable effect in reducing the amount of sugar in the urine of patients suffering from diabetes mellitus. Chopra and Bose tested the drug pharmacologically and clinically. They found that it contains an enzyme with amylolytic properties, a hormone and traces of an alkaloid, but none of these substances reduces sugar when administered subcutaneously to rabbits. Fresh juice extracted from the leaves, stem and root of the plant produces no reduction of sugar in the blood or urine of patients suffering from glycosuria.

Estimating Amount of Quinin in Solutions.—The method described by Sinton depends on the relative opacities produced in quinin solutions of varying strengths by the addition of equal amounts of Tanret's modification of Mayer's reagent.

Hemogregarines in Blood.—The points brought forward by Sinton strongly support Wenyon's view that the bodies described from smears of human blood as "hemogregarines" are not of a protozoal, but of a vegetable nature, that they

are not parasites but contaminations of extraneous origin, and that "hemogregarines of man have still to be discovered."

Blood Sugar and Tolerance Test.—Blood sugar was estimated by Bhatia and Coelho in thirty-eight normal subjects, of whom eighteen lived on a "mixed" diet, and twenty were pure "vegetarians," partaking of large quantities of carbohydrates. In the former class (nonvegetarians), the average blood sugar was lower, tolerance for carbohydrates greater, and glycuresis less common than in the latter (vegetarians). The significance of these differences in the two classes of individuals is discussed.

Does Bedbug Transmit Kala-Azar?—A total of 138 *Cimex hemiptera*, all caught in the bedding of cases of kala-azar, were examined by Shortt and Swaminath by culture of the entire gut in NNN medium. The cultures were uniformly negative.

Experimental Kala-Azar.—Shortt and Swaminath assert that intradermal inoculation of a comparatively small amount of infective material from kala-azar resulted in a well marked and enduring invasion of the internal organs by the parasite of kala-azar, a result in marked contrast to the slight and transient infections described by some writers.

Experimental Kala-Azar.—The question as to whether kala-azar infection can occur through ingestion would seem to be answered in the affirmative by the results of experiments reported on by Greig and Chirstophers, though further positive results are necessary to confirm this finding.

Effect of Epinephrin on Wassermann Reaction.—Anderson and Sinton are of the opinion that if their technic is used, no reaction which would give rise to a false "positive" Wassermann reading is likely to follow the subcutaneous injection of epinephrin hydrochlorid in doses of 1 mg.

Journal of State Medicine, London

33: 401-450 (Sept.) 1925

Spread of Dysentery Considered from Aspect of Public Health. P. Manson-Bahr.—p. 401.
Human Filariidæ. G. C. Low.—p. 415.
Mites and Occupational Diseases. A. G. G. Thompson.—p. 419.
Sterilization of Water by Chlorin and Its Compounds. C. H. H. Harold.—p. 428.
Teeth of School Child. D. Mackay.—p. 440.

Medical Journal of Australia, Sydney

2: 245-272 (Aug. 29) 1925

Medical Responsibility Regarding National Health. F. S. Hone.—p. 245.
*Acute Pernicious Anemia with Epistaxis. J. J. Woodburn.—p. 257.
*Maydl's Hernia. G. Bell.—p. 258.

Acute Pernicious Anemia with Hemorrhage.—Woodburn's patient had hematuria for eight days and several severe attacks of epistaxis. The onset gave no clue to the ultimate diagnosis and termination of the case. The history suggested some lesion of the spine and hip joints and of the renal tracts. As was shown by examination these systems were unaffected. The patient's condition was probably one of a rapidly advancing hemolytic anemia (possibly of unknown streptococcal origin) with rapid destruction of red cells and reversion to a primitive type of megaloblastic red cell formation. That is, it was an acute pernicious anemia probably due to some unknown infecting organism, as shown by the rise in temperature and pulse rate. The pain in the spine and in the region of the hip joints was probably due to the changes taking place in the bone marrow. The hemorrhages, of course, are usual in any form of pernicious anemia, more especially in such an acute case as this. The necropsy findings confirmed the diagnosis.

Maydl's Hernia with Gangrene.—The importance of withdrawing and inspecting that portion of the gut which lies within the abdomen and immediately proximal to the constriction is shown by Bell's case. An intra-abdominal and intermediate loop of bowel, continuous with the two loops in the sac, was drawn down. It was 12.5 cm. (5 inches) in length and gangrenous. The strangulation was of the variety often referred to as "retrograde" and the hernia one sometimes referred to as Maydl's hernia. There was very slight distension of the bowel above the site of constriction. Twenty-five centimeters (10 inches) of small intestine including the gangrenous segment were resected. A lateral anastomosis was made. The lower end of the portion of ileum resected was 30 cm. (12 inches) from the ileocecal valve.

2: 273-300 (Sept. 5) 1925

Common Sense. E. Russell.—p. 273.
*Splenectomy in Acute Essential Thrombocytopenic (Hemorrhagic) Purpura. S. O. Cowen.—p. 279.
Talipes Calcaneus. W. K. Hughes.—p. 283.
Case of Cystitis Cystica Associated with Severe Hematuria. W. A. Hailes.—p. 285.

2: 301-358 (Sept. 12) 1925

Causes and Prevention of Maternal Morbidity and Mortality. E. S. Morris.—p. 301.
Pregnancy with Malformation of Vagina. H. A. Ridler.—p. 345.

Splenectomy in Hemorrhagic Purpura.—The clinical picture presented by Cowen's patient, characterized as it was by the presence of multiple spontaneous hemorrhages, suggested at once that she was suffering from an acute blood disease. Hemophilia could be excluded, owing to the sex of the patient. Moreover, in hemophilia extensive purpuric skin lesions are unusual, the hemorrhages are not spontaneous but follow some injury, however slight, and the bleeding time and platelet count are normal, though the coagulation time is greatly prolonged. It was, therefore, obvious that the case must be classed as one of purpura.

National Medical Journal of China, Shanghai

11: 219-308 (Aug.) 1925

*New Antiscarlatinal Serum. S. P. Chen.—p. 219.
*Production of Antiscarlatinal Serum. E. T. H. Tsen and P. Z. King.—p. 224.
Otosclerosis. Shih-Ping Ts'en.—p. 226.
Fibromyoma of Uterus; Six Cases. Y. Hsün-Yüan.—p. 234.
*Coexistence of Tuberculosis and Plague. H. M. Jettmar.—p. 257.
Hookworm Disease in China. W. W. Cort and N. R. Stoll.—p. 282.

Scarlet Fever Serum.—Throat swabs were taken by Chen from all the severe cases of scarlet fever encountered at the hospital, and *Streptococcus hemolyticus* was isolated from each case. A serum was prepared and from this organism, nineteen strains were used. This serum appears to have a decidedly curative effect in severe cases of scarlet fever, especially those which a long experience considers as likely to end fatally without it. The serum should be administered early in the disease. Although unconcentrated, the serum is required in a much smaller quantity than any of the other antiscarlatinal serums now available. Given early in virulent cases, it appears to ward off serious complications. This serum has not been made use of in the milder cases. In some severe cases it has the effect of bringing the temperature down by crisis. It appears to be of benefit in erysipelas developing in scarlatinal cases, by cutting short the course of the disease.

Scarlet Fever Serum.—Nineteen strains of hemolytic streptococcus isolated from the throats of scarlet fever patients were used by Tsen and King in the preparation of this serum. These organisms were grown in 0.5 per cent. glucose broth. After twenty-four hours' incubation at 37 C., the broth cultures were mixed together and centrifugalized; the supernatant clear fluid was then removed, and the sedimented bacteria were suspended in normal salt solution. This new suspension was recentrifugalized, and the sedimented bacteria were resuspended in normal salt solution and strained through sterile, fine-meshed gauze. By comparison with a standard suspension of barium sulphate, the bacterial count was adjusted to 5,000 million per cubic centimeter. This suspension was injected into the horse immediately. For immunizing the horse, dead cultures were used first. These were prepared by heating the bacterial suspension at 55 C. for one hour after it had been strained through gauze. Altogether twelve doses of dead and fourteen doses of living cultures of gradually increasing amounts were injected intravenously in the usual way. Test bleedings were begun after the fifth injection of the living cultures. When the serum was found to be satisfactory by means of protection tests on mice, regular bleedings were made. The serum, after separation from the blood clot, was preserved with 0.25 per cent. tricresol. Finally, tests for sterility, toxicity and potency were made. Two-tenths cubic

centimeter of serum protects a mouse against 1,000 fatal doses of this organism.

Coexistence of Tuberculosis and Plague.—Experiments made by Jettmar show that plague bacilli do not penetrate into caseated tuberculous tissue and are only seen in small numbers in the tuberculous epitheloid tissue. Small tuberculous and plague necroses may fuse together. Plague bacilli when mixed with tubercle bacilli do not show any involution forms. In vitro the two kinds of bacteria do not essentially injure each other.

Journal de Chirurgie, Paris

26: 129-256 (Aug.) 1925

*Buried Tube to Drain Bile into the Duodenum. P. Duval and A. Richard.—p. 129.

Internal Drainage of Bile.—Duval and Richard give an illustrated description of the technic for burying a tube in the common bile duct, after cholecystectomy, to carry the bile down into the duodenum below the papilla of Vater. Ten cases are reported to show the advantages of this internal rather than external drainage.

Journal de Radiologie et d'Electrologie, Paris

9: 353-382 (Aug.) 1925

*Roentgenography of Vertebral Tumors. J. A. Sicard et al.—p. 353.

Roentgenographic Aspects of Tumors of the Vertebrae.—Sicard and his co-workers give a roentgenologic description of different forms of secondary cancer, primary sarcoma, myeloma and lymphogranuloma in the spine. The twenty-seven cases reported confirm the importance of roentgenography in the differential diagnosis. Sixty-eight fine plates show the roentgenographic and photographic findings.

Journal d'Urologie Médicale et Chirurgicale, Paris

20: 97-192 (Aug.) 1925

*Interrupted Micturition. O. Mercier.—p. 97.
*Remote Results of Suprapubic Prostatectomy. P. Salvini.—p. 103.
*Hematuria in Pyelonephritis. H. Blanc.—p. 125. Conc'n.
Gonococcus Vesiculitis Simulating Kidney Colic. Avramovici.—p. 141.
Technic for Methylene Blue Treatment of Cystitis. Blanc.—p. 144.

Interrupted Micturition.—Mercier has observed that hypertrophy of the trigon, forming a bar between the mouths of the ureters, is liable to interrupt the flow of urine. As the bladder contracts, this bar stiffens and holds back the urine. Then, as the bladder relaxes, this bar relaxes with it, and the pent up urine escapes. Interrupted micturition is thus not peculiar to a diverticulum.

Suprapubic Prostatectomy.—Salvini states that 70 per cent. of 180 operations of this kind cured the patients completely and permanently (1921-1924). To prevent orchitis, the vasa deferentia are systematically ligated and severed. This does not impair potentia coeundi. The mental condition improved, and in one case there was no return of the epileptic seizures of the preceding few years. One man developed neurasthenia after the operation, and committed suicide in delirium. Tardy hemorrhage occurred in three cases; in two, probably from the dropping off of the eschar; in the other case, the hemorrhage a year later cannot be explained so easily. No recurrence of the adenoma was known in any instance.

Hematuria in Pyelonephritis.—Blanc presents evidence to demonstrate the remarkable efficacy of simple catheterization of the ureter in arresting a hemorrhagic tendency in pyelonephritis, supplementary to the usual measures.

Nourrisson, Paris

10: 285-348 (Sept.) 1925

*Disturbances During Dentition. A. B. Marfan.—p. 285.
*Jaundice of the New-Born. G. L. Hallez.—p. 297.
The Microscopic Lesions in Rickets. J. Debray.—p. 312.

Pathologic Phenomena of the First Dentition.—Marfan reiterates that there are no bodily disturbances for which the dentition is directly responsible. But in an infant with the spasmophilic diathesis, spasm of the larynx or generalized convulsions may be brought on by a difficult eruption of teeth. Fever during teeth cutting may be due to inflammation around the tooth crown, or to a latent disease aroused by the dentition. It is possible that eruption of teeth, especially if it is difficult and abnormally prolonged, might produce humoral disturbances, favoring the appearance of pathologic phenomena. The latter in certain cases may be rapidly relieved by opening the dental sac through a crucial incision of the gum.

Causes of Jaundice in the New-Born.—Hallez' conclusions are based on thorough examination of nineteen cases. Icterus neonatorum is caused not only by an intense hemolysis in the first hours of life, but also by a transient functional deficiency of the liver, as revealed by hypercholemia, frequent choluria and even urobilinuria.

Paris Médical

57: 225-236 (Sept. 19) 1925

Consequences of Influenza Anergy. Dopter and Jausion.—p. 225.

57: 237-252 (Sept. 26) 1925

*Bone Implants in Lower Jaw. H. Rouvillois.—p. 237.
Physiotherapy in Respiratory Affections. G. Rosenthal.—p. 245.
Organotherapy for Sterility in Women. E. Pouget.—p. 249.

Bone Grafting in Pseudarthrosis of the Lower Jaw.—Rouvillois employed bone implants in three cases of pseudarthrosis complicating a gunshot fracture of the jawbone. The grafts were taken from the tibia, and the usual bone grafting technic applied. Consolidation of the bone parts was manifest after four months, allowing mastication with artificial teeth. The bone implants were not applied until several weeks or months after the infectious process had healed, and all traces of osteomyelitis or fistula had disappeared.

Presse Médicale, Paris

33: 1249-1264 (Sept. 19) 1925

Weakness of Extensor Muscles as Sign of Lead Poisoning. F. H. De Balsac et al.—p. 1249.
Etiology of Cancer, and Gye's Theory. E. Harde.—p. 1251.
Thoracectomy for Pleural Fistula. M. Guilleminet and R. Labry.—p. 1252.
*Treatment of Gonorrhea. A. Tansard.—p. 1254.
*Vaccination Against Measles. M. B. Sindoni.—p. 1255.

Autovaccination Associated with Protein Therapy in Gonorrhea.—Tansard suggests that injections of vaccine and protein should be given simultaneously in treatment of gonorrhea. Three cases of chronic urethritis were cured by this method, while the same injections, given separately had been without results. Under the simultaneous injections, fifteen patients with acute or chronic urethritis recovered, without local treatment. From fifteen to twenty injections were usually applied; in certain cases more injections were necessary. In one case of thirty years' standing, an apparently inevitable prostatotomy was avoided by this treatment, prolonged for three and a half months. An autogenous vaccine, six thousand millions of bacteria per cubic centimeter, was used in six cases with a periurethral abscess. A dose of 0.2 c.c. was given at the first injection, gradually increased by 0.1 to 1 c.c. A dose of 1 c.c. of protein was used in the first injection. If the reaction was not pronounced, 5 c.c. was given the next time. The injections were given daily, or thrice weekly. In the abscess cases, the suppuration stopped and the fistula healed after four or five injections. A patient with gonorrheal rheumatism of the pseudophlegmonous form recovered without the slightest ankylosis. In this case one injection of over 3 c.c. of autovaccine and one of 6 c.c. of protein had been given daily for twelve days. Seventeen injections of a stock vaccine, containing gonococci and staphylococci, given before, had been ineffectual. Shock, characterized by moderate fever and general malaise, may occur after the first four injections. Tansard advises a vegetarian diet the day of injection, and constipation averted during the treatment. A colloidoclastic diathesis and asthma are contraindications for these injections. With a periurethral abscess, this treatment gives better results than an operation or a vaccine alone, since folliculitis and urethritis are cured at the same time as the abscess.

Prophylactic Vaccination Against Measles.—Sindoni used vaccine prepared from cultures treated with phenol at 0.5 per cent. From three to five injections of 2 c.c. each, were given intramuscularly every second day. About 346 children in asylums, aged from 1 day to 14 years, were vaccinated. In

the asylum where vaccination was applied immediately after the occurrence of a few measles cases, only one child developed the disease. In another asylum, where vaccination was late, eighty children out of the hundred developed measles. Sixty children, aged from 6 months to 12 years, were vaccinated in private homes. None developed measles. About 133 children of the same age, that had been directly exposed to measles infection in the hospitals, were vaccinated. The disease developed in eight.

33: 1265-1280 (Sept. 23) 1925

*Arteriotomy for Embolus. C. Lian and P. Moure.—p. 1265.
*Organotherapy in Tuberculosis. Bayle.—p. 1266.
*Review of Research on Measles. R. Pollitzer.—p. 1269.
*The Dual Innervation of the Voluntary Muscles. P. Oury.—p. 1271.

Embolectomy.—Lian and Moure report a case in which an embolus was removed from the axillary artery in a man with a failing heart. The incision of the artery and extraction of the embolus under local anesthesia brought complete restoration of the circulation, demonstrated by the arterial pressure and the oscillometer findings. The arm regained normal function. They reiterate that the operation is indicated only for an embolus and not for a thrombus. The embolus may be differentiated by the exaggerated pulsation of the artery above the point of obstruction, compared with the sound side. This excessive pulsation, cephalad, is not observed with a thrombus.

Spleen Extract in Treatment of Tuberculosis.—Bayle reports as the first results of this treatment, which he has applied in several hundreds of cases since 1903, a gain in weight of 4 or 6 pounds. This was manifest the first two or three weeks of the treatment; and an average of 24 pounds was gained in the year. Lesions of the first stage of tuberculosis improved within the first month. Cold abscesses of the elbow were cured in one month; of the knee in two or three; of the hip joint in six or eight months. Nonsuppurating bone and joint lesions retrogressed, and the limbs regained normal function. A surprising effect was noted in tuberculous glands. The number of tubercle bacilli gradually diminished and finally disappeared entirely. An extract of pig's spleen was used, in 5 c.c. ampules, for the injections, or was given in syrup by the mouth. The oral route was used in prophylaxis or as adjuvant to the injections. Adults are given daily four tablespoonfuls, each representing 25 gm. of spleen tissue, taken with the meals. Children under 3 years are given daily one teaspoonful for four days during the week; under 5 years, two; under 7, one tablespoonful; under 10, two; under 14, three. Adults and children above 10 are given the syrup for three weeks; then a pause for a week or two. One or two injections, each of 5 c.c., are given daily to adults. The dose of 1 c.c. is injected per year of age, in children under 5. The injections are made subcutaneously, in the abdomen, or intramuscularly, in the thigh; they are not accompanied by fever or anaphylactic phenomena. The treatment should be continued for a few months after apparent recovery. He claims 100 per cent. of recoveries in tuberculosis of the first degree and 75 per cent. in all. This splenic organotherapy, he adds, is absolutely harmless. It is being used in a number of French hospitals.

Etiology and Pathogenesis of Measles.—After a circumstantial review of the research work on measles, Pollitzer summarizes Caronia's experiments leading, he says, to the discovery of the specific micro-organism in 1923.

The Dual Innervation of Striped Muscle.—Oury emphasizes that the voluntary or reflex contraction lasts only as long as the excitation in striated muscle fibers, innervated by the cerebrospinal nerve terminals. These fibers possess the "contractile tone" and command the voluntary movements. Muscle fibers innervated by the sympathetic, become longer or shorter during excitation, and the induced condition still persists after the stimulus ceases. These fibers possess the "plastic tone." The existence of both "movement muscles and fixing muscles" is manifest in vertebrates and in man. Lesions of fibers with sympathetic innervation are responsible for decerebrate rigidity or extrapyramidal contracture in which the "plastic tone" predominates. Affections of fibers with cerebrospinal innervation may induce muscular atrophy or dystrophy, also myasthenia. Oury recalls that Royle and Hunter suggested section of the sympathetic for exaggerated "plastic tonus" in Parkinson's disease, encephalitis sequelae and decerebrate rigidity.

Schweizerische medizinische Wochenschrift, Basel

55: 885-904 (Sept. 24) 1925

Metabolism and Skin Diseases. W. Lutz.—p. 885.
Curvatures of the Spine. M. Dubois.—p. 890. C'en.
*The Blood Pressure in Children. Thomas.—p. 896.
*Vaccine Encephalitis. F. Lucksch.—p. 897.
*Prevention of Thrombosis. M. Walthard.—p. 898.

The Blood Pressure in Children.—Thomas measured the blood pressure in 627 children (7-14 years of age). The systolic pressure in boys between the ages of 7 and 11 was 98, the diastolic, 61 mm. of mercury; in girls of the same age, 93 and 58. In boys from 11-14, the systolic pressure averaged 107, the diastolic 71 mm.; in girls, 106 and 63, respectively. The pressure was lower in tuberculous children but only in the older group. The amplitude of the blood pressure is 5 to 10 mm. greater in children than in adults.

Vaccination Encephalitis.—Lucksch observed three cases of encephalitis following vaccination against smallpox. He advises to vaccinate only perfectly healthy children, and to defer the vaccination at times of an epidemic of encephalitis or poliomyelitis.

Prevention of Thrombosis.—Walthard endeavors to ward off thrombosis and embolism by systematic exercises of the women, beginning on the first day after labor or a gynecologic operation. The foot end of the bed is raised 50 cm. above the floor for women with varicose veins. He describes the simple, progressive movements of the arms and legs and deep breathing which he advocates while the women are confined to bed.

Pediatria, Naples

33: 917-972 (Sept. 1) 1925

*Complement Fixation in Smallpox and Vaccinia. P. Ritossa.—p. 917.
Resistance of the Leukocytes in the New-Born. C. Gallo.—p. 924.
*Specific Substances in Blood and Urine in Scarlet Fever. B. Peschle.—p. 931.
*Pituitary Extract in Treatment of Enuresis. L. Bonacorsi.—p. 936.
Venipuncture in Infants. L. Consiglio.—p. 954.

Complement Fixation in Smallpox and Vaccinia.—Ritossa obtained complement fixation with the serum from smallpox patients and from vaccinated persons when using the crusts from smallpox patients as antigen. This speaks for the identity of the virus of vaccinia and smallpox, and for its presence in the crusts in smallpox.

Specific Substances in Blood and Urine in Scarlet Fever.—Peschle found in the blood and urine of scarlet fever patients, during the eruption, toxic substances giving positive skin tests in susceptible individuals. Preventive vaccination with Caronia's cultures protected against these substances.

Pituitary Extract in Treatment of Enuresis.—Bonacorsi reports recovery of eight out of twelve children with enuresis and great improvement in three. She used a series of injections of pituitary extract.

Policlinico, Rome

32: 1345-1380 (Sept. 28) 1925

*Periarterial Sympathectomy. L. Durante.—p. 1345.
Sympathectomy in Tuberculosis of Bones and Joints. C. Bertone.—p. 1349.
Case of Sympathectomy. A. Dami.—p. 1353.
Proteid Sugar and Acetone in Insulin Treatment. D. Liotta.—p. 1354.
Specific Prevention of Scarlet Fever and Measles. G. Caronia.—p. 1357.
Limits of Quinin Prophylaxis. A. Lusignoli.—p. 1359.

Periaterial Sympathectomy.—Durante points out that an approximately complete interruption of the sympathetic fibers can be accomplished only by removing the adventitia nearer the periphery of the extremity. This method has the further advantage of avoiding the untoward possibilities of an intervention on the large arteries. His six patients recovered. Among them was one with a mal perforant; sympathectomy on the femoral artery had failed, but the decortication of the posterior tibial was successful. This patient, however, had a relapse ten months later.

Riforma Medica, Naples

41: 817-840 (Aug. 31) 1925

*Variations of Arterial Pressure. A. Luisada.—p. 817.
Juvenile Osteochondritis of Spine. G. Valtancoli.—p. 823.
Treatment of Tuberculous Peritonitis with Pneumoperitoneum. D. Maestrini.—p. 827.

Variations of Arterial Pressure.—Luisada determined every three hours the systolic and diastolic blood pressure in forty-five patients and five controls, and found four types of the curve.

41: 841-864 (Sept. 7) 1925

*Duodenal Feeding in Gastric Ulcer. G. Raffaele.—p. 841.
Duodenopyloric Stenosis of Gallbladder Origin. O. Cignozzi.—p. 844.
*Sodium Chlorid Fever. G. De Nito.—p. 848.
Surgery of Perforated Gallbladder. E. Aievoli.—p. 850.
Etiology of Tuberculosis. F. Piccininni.—p. 851.
The Fight Against Tuberculosis. A. Ferrannini.—p. 858.
Gummatous Hepatitis and the Echinococcus. O. Cantelli.—p. 859.

Duodenal Feeding in Gastric Ulcer.—Raffaele reports favorably on Einhorn's method, and draws the attention of Italian physicians to it.

Sodium Chlorid Fever.—De Nito failed in his attempts to induce hyperthermia in animals by intravenous or subcutaneous injections or by ingestion of physiologic or hypertonic solution of sodium chlorid.

Rivista di Clinica Pediatrica, Florence

23: 577-648 (Sept.) 1925

*The Growth of Normal Infants at Florence. D. Moggi.—p. 577.

The Growth of Normal Infants at Florence.—Moggi recorded the findings under seventeen different headings as he examined infants at Florence during the first year of life, a total of 400 individual measurements. The children of Latin peoples are usually shorter and weigh less at birth than Anglo-Saxon infants. Allowing for this racial difference, his figures are approximately the same as those obtained by others in other countries.

Brazil-Medico, Rio de Janeiro

1: 27-44, 1925

*The Aorta in Congenital Syphilis. Martagão Gesteira.—p. 27.
Indications for Operative Treatment for Uterine Fibromas. P. P. Paes de Carvalho.—p. 31.
Gonococcus Ophthalmia. E. Campos.—p. 33.
*Malarial Coma. Clinio de Jesus.—p. 34.

Exaggeration of the Second Aortic Sound in Syphilis.—Martagão Gesteira did not find in adults this sign to which Rubião Meira called attention in 1916 as a new sign of syphilis. But he discovered it almost constantly in children with congenital syphilis, and he relates some case histories to show its importance in the differential diagnosis, and as revealing a surprising amount of aorta disease in apparently healthy children. The course of the cases, however, confirmed the reliability of this early warning sign. It confirms Beretervide's discovery of an abnormally wide aorta in 99 per cent. of 200 children with congenital syphilis.

Malarial Coma.—A youth was brought into the hospital in a comatose condition for which no cause was apparent until the malarial parasite was found in the blood. The absence of mononuclears was ascribed to the intensity of the infection.

Repertorio de Medicina y Cirugía, Bogota

16: 265-318 (April) 1925

*Primary Infantile Acidosis. C. Torres Umaña.—p. 268.
Stoll Method for Estimating Hookworm Infestation. Wilson.—p. 301.
History of Leprosy in Colombia; Carrasquilla. Rico.—p. 304. C'tn.

Primary Acidosis in Children.—Torres Umaña thinks we must distinguish this primary infantile acidosis from acidosis in adults, and that secondary to febrile conditions, inanition, diabetes, etc. He says it is frequently observed at Bogota, and is often grave, appearing in the form of periodical uncontrollable vomiting, a meningeal form, and a form with similar headache, pallor and acetonuria, but, as the vomiting ceases, the temperature and the general condition grow rapidly worse, with air hunger and enlargement of the liver, dysphagia and increasing prostration. The pulse may keep good throughout. Recovery is slower than in the other forms. About 50 per cent. of the children are between 7 and 12 months old. In the extremely toxic cases, he never witnessed any benefit from transfusion of blood. The main reliance is on alkalies, and dieting to restrict production of acids. Two of four small infants recovered after injection in the longitudinal sinus of a solution of sodium bicarbonate treated with carbon dioxid.

16: 319-364 (May) 1925

Text of the New Law in Colombia on Social Hygiene and Care of the Sick and Disabled.—p. 321.
Case of Influenzal Meningism. L. A. Forero Rubio.—p. 335.
*Creatinin in the Blood. R. Saravia Gallo.—p. 337.

Creatinin in the Blood in Colombia.—Saravia Gallo reviews the present status of our knowledge of creatinin, and states that his research on 113 persons at Bogota demonstrated that the normal average is much below that in Europe (2.5 mg.). At Bogota the average for healthy men is 1.7 mg. per hundred cubic centimeters of blood, and, for women, from 1.3 to 1.5. He found the creatinin level high in chronic parenchymatous nephritis and uremia, and wherever there was much tissue destruction. The level rose a little during the onset of pneumonia, malaria, typhoid fever and other febrile conditions, but not in the first stage of syphilis or diabetes. The creatinin is below the normal average in the debilitated and in convalescents, and also as term approaches in pregnancy. Experiments on rabbits showed the same creatinin content after severe exercise as before, thus confirming that the creatinin is endogenous and does not proceed from muscle tissue waste.

Revista de la Asoc. Médica Mexicana, Mexico City

3: 887-931 (Aug.) 1925

Tribute to Daniel A. Carrión. T. G. Perrin.—p. 889.
Vaginal Ligamentopexy by Wertheim's Technic. B. Bandera.—p. 894.
When Can We Say Gonorrhea is Cured? M. Vázquez.—p. 898.
*Bullet Wound of Fetus. J. Rábago.—p. 902.
*Epinephrin in Treatment of Gas Gangrene. S. Uribe Rivera.—p. 905.
Necessity for Teaching Individual Prophylaxis to Supplement the Present Fight Against Venereal Disease. I. Chávez.—p. 910.

Fetus Shot in the Thorax.—The woman died from hemorrhage after the viable child had been extracted by cesarean section, after she had received a gunshot wound in the abdomen. The bullet had passed through the thorax of the fetus, entering in the tenth left interspace and emerging in the suprascapular region above. Blood escaped from the child's mouth when it was suspended by the feet. The child has survived in good condition; there was not even an appreciable pleural effusion, and the wounds healed by primary intention.

Epinephrin in Infected Wounds.—Uribe Rivera injected 0.5 c.c. of the official solution of epinephrin in the vein at the elbow in a case of gas gangrene of the leg that had required amputation and an emergency exarticulation at the hip joint. The man was apparently moribund, but he recuperated by the next day, when a second injection, 0.25 c.c., was given, with complete recovery. Similar success was realized in two other cases of gas gangrene, of the arm or hand. The third case was in an intern who had been contaminated during the operation on the second case. All recovered under the epinephrin injections.

Revista de Medicina y Cirugía, Caracas

8: 91-113 (March 31) 1925

*Acute Scarlatinal Polyarthritis. F. de P. Rivas Maza.—p. 91.
The Sedimentation Test in Pulmonary Tuberculosis. Fenstermann and Baldó.—p. 95.

Acute Polyarthritis of Scarlatinal Origin.—Rivas Maza reports a case of severe involvement of nearly all the joints, large and small, seven days after the development of the principal eruption in a case of retrospectively diagnosed scarlet fever in a young woman. Syphilitic rheumatism had been assumed by the attending physician and he had sent the patient to the hospital for neo-arsphenamin treatment. The urine was practically normal, and the arthritis subsided completely in a week under simple diuretics and disinfectants for the kidneys, including sodium benzoate. Rivas Maza comments on the harmless and prompt recovery in such cases of scarlatinal polyarthritis which has no need for heroic measures or the usual treatment for articular rheumatism. In three cases in 1924 scarlet fever developed in parturients, and

streptococci, staphylococci, pneumococci, the colon bacillus and saprophytes were cultivated from the throat but there was no puerperal infection.

Semana Médica, Buenos Aires

2: 277-332 (Aug. 6) 1925

*Sporadic Plague. J. R. Paso.—p. 277.
*Cancer of the Tongue. R. Finochietto.—p. 288.
Suggested Changes in Curriculum. J. Llambias.—p. 296.
Report of the Public Health Service for 1924. G. Aráoz Alfaro and T. Padilla.—p. 299.
The Principles for Radium Treatment. D. Brachetto-Brian.—p. 302.
Apparatus for Injection of Stain for Cholecystography. J. A. Saralegui. —p. 308.
Tuberculosis in Schools for Weakly Children. P. Winocur.—p. 311.
*Abstention in Tubal Abortion. A. Chueco.—p. 314.
Encapsulated Purulent Pleurisy of Appendix Origin, Spontaneous Recovery After Appendectomy. E. Beretervide and F. Pozzo.—p. 319.
*Decomposition and Congenital Syphilis. J. Medeiros.—p. 322.
Case of Double Hearing of Certain Sounds from Relaxation of Left Drum Membrane. V. Ribón.—p. 324.

Sporadic Cases of Plague.—Paso describes a case of plague with primary and secondary plague carbuncles and fatal septicemia. Two other fatal cases of plague had preceded it in the same district in the three years before, but no connection between the cases could be discovered. Unusual numbers of rats had infested the stable where the man had worked, and some were sick. The rats migrated soon after, but no further cases of plague have developed during the nearly three years since.

Cancer of the Tongue.—Finochietto states that in the case described ligation and severing of the lingual arteries on both sides reduced the large cancer on the tongue to a fifth of its former size in a very few days. With invasion of the tonsils, he ligates the inferior pharyngeal arteries also. He relates some typical instances to show the advantages of preliminary ligation before operating on the tongue, or as a palliative measure in inoperable cases.

Abstention in Tubal Abortion.—Chueco's practice is to give morphin first, to combat the shock. If the tube is permeable, the fetus dies, and there is tubal abortion. If the openings are obstructed, the fetus does not die, and the tube bursts. In either condition the tube may be empty when palpated. The rupture requires an emergency operation, but he always refrains until the diagnosis is certain. He reiterates that complete tubal abortion does not require an operation. There is not much extravasation of blood, and resorption of this is promoted by diathermy. The indications are merely to combat the shock; this is more pronounced when there have been no preceding symptoms. In operating, when the tumor can be reduced and brought outside, he extirpates it through the anterior vagina, with a supplementary posterior colpotomy when drainage is needed. He demonstrated a case of this kind. The signs and symptoms had indicated a tubal pregnancy of two and a half months. The tube was found obstructed, with rupture impending, but it was safely removed by anterior colpotomy, and the woman was up and about in six days.

Malnutrition and Congenital Syphilis.—Medeiros reports two cases in which what seemed to be typical malnutrition in young infants, of the Finkelstein decomposition type, yielded promptly to tentative treatment for congenital syphilis.

2: 401-468 (Aug. 20) 1925

*Experimental Disease of the Internal Ear. R. Podestá.—p. 401.
*Separation of the Epiphysis. C. Lagos García.—p. 413.
Opening Lecture on Skin and Venereal Diseases. Baliña.—p. 423.
Laws Regulating Biologic Action of Roentgen Rays. Saralegui.—p. 429.
*Arterial Tension in General Practice. J. B. de Quirós.—p. 436.
*Syphilis of the Prostate. J. Salleras.—p. 450.

Experimental Labyrinthitis.—Podestá's nineteen photomicrographs confirm that the bone lesions in the internal ear are always preceded by necrosis or purulent destruction of the mucosa of the middle ear, acute or chronic, of various origins.

Detachment of the Epiphysis of the Neck of the Femur.—Lagos García presents evidence to show that one of the features of the adiposogenital syndrome is a peculiar fragility of the tissues forming the junction of the shaft of the femur with the epiphysis. The epiphysis is liable to separate in girls of this type. In the three cases described the girls were all 12 years old, and no trauma was known. This detachment of the epiphysis is often mistaken for fracture of the cervix or a sprain of the hip joint. Stout girls at this age should be supervised with care—including frequent roentgen-ray examination when they complain of slight pains in this region, and the joint should be relieved of strain, and organotherapy be applied until this critical age of extra fragility of the epiphysis is past. The pains may be slight, with very little limping, but these disturbances are tenacious. There is seldom spontaneous pain when reclining.

The Blood Pressure in the Tuberculous.—De Quirós tabulates the findings in regard to arterial pressure and viscosity of the blood in 100 patients with pulmonary tuberculosis, calling attention to the ratio between them characteristic of different phases of the tuberculosis.

Syphilis of the Prostate.—Salleras relates the case history of a man, aged 55, who for about a year had had pollakiuria in the second half of the night, with dysuria and pains after micturition. These disturbances had been transient until the last three months when they became more severe and tenacious, and micturition was imperative every half hour during the day, and extremely difficult. He had been treated for gonorrhea and syphilis in his youth but had never noted a chancre. The prostate was enlarged, the bladder irritable, with retention of 20 c.c. of urine; and cancer seemed certain, but under tentative treatment for syphilis all the symptoms subsided. Nothing of the former clinical picture was left by the end of two months except slight initial dysuria, and this was gradually disappearing. In twenty-eight such cases on record, the spirochete was found in the prostate in two. The ages ranged from 18 to 73. In some cases there were continual pains, spreading to the legs, and in some there was complete retention. There may be hematuria or hemaspermia, a sensation of a foreign body in the rectum, pain in the perineum, or difficulty in defecation. The good general condition is also instructive, and the long course.

Deutsche medizinische Wochenschrift, Leipzig

51: 1555-1598 (Sept. 18) 1925

Lymphogranulomatosis, Tuberculosis and Neoplastic Irritation. H. Stahr. —p. 1555.
*Constitutional Factor in Pernicious Anemia. Neuburger.—p. 1557.
*Metabolism After Resection of Intestine. H. Wildegans.—p. 1558.
Treatment of Bronchial Asthma. A. Kempinski.—p. 1561.
*Cocainism and Homosexuality. E. Joël and F. Fränkel.—p. 1562.
Eye Disturbances After Veronal Poisoning. K. Steindorff.—p. 1565.
*Acetylene Anesthesia. O. Mallebrein and J. H. Maier.—p. 1567. C'cn.
Transverse Presentations. W. Hannes.—p. 1569. C'cn.
Liver Function Test with Amino-Acids. Von Falkenhausen and B. Boehm.—p. 1571.
Microtest for Phosphoric Acid. K. Samson.—p. 1571.
Relaxation of the Diaphragm. J. Szántó.—p. 1572.
*Treatment of Laryngeal Diphtheria. K. Ochsenius.—p. 1573.
Treatment of Furunculosis. Von Grosschopff.—p. 1575.
Treatment of Gonorrhea. Vertun.—p. 1575.
Insulin Treatment. A. Wagner.—p. 1576. Begun, p. 1489.
The Hygiene Exposition at Düsseldorf. M. Fraenkel.—p. 1578.
Vaccination Propaganda. G. Benjamin.—p. 1579.
Medical and Theologic Care for the Soul. J. H. Schultz.—p. 1580.
Blood Coagulation. E. Wöhlisch.—p. 1593.

Familial and Constitutional Factor in Pernicious Anemia.—Neuburger finds no evidence in favor of a hereditary factor in pernicious anemia: Four of his sixty-five patients believed that the disease had occurred in their family. His investigations showed that they were mistaken. He also examined the gastric secretion in twenty-nine relatives of fourteen patients. Only one of these subjects had achylia.

Metabolism After Resection of Intestine.—Wildegans resected parts of the small intestine in dogs. Proteins and fats were not well digested in the first four weeks after resection of two thirds of the small intestine, but the animals recovered later. They died from inanition when seven or eight tenths of the small intestine was removed. The jejunum and the ileum can compensate for each other.

Cocainism and Homosexuality.—Joël and Fränkel find that cocain addiction usually removes only the inhibition in a bisexual man. In heterosexual men the loss of potency without diminishing of the libido, together with the craving for new sensations, accounts for the inversion.

Acetylene Anesthesia.—Mallebrein and Maier report the results of 2,000 anesthesias made with acetylene at the gynecologic clinic at Würzburg. No death occurred; postoperative pneumonia was observed only in 0.3 per cent. and bronchitis in 0.3 per cent. of the women. The method surpassed in obstetrics all the classical types of anesthesia.

Treatment of Laryngeal Diphtheria.—Ochsenius believes that tracheotomy and intubation could be rendered superfluous by sufficiently large and early administered doses of antitoxin. At least 10,000 units are advisable even in infants, and reinjection is indicated six hours later if the improvement is no distinct.

Deutsche Zeitschrift für Chirurgie, Leipzig

193: 1-144 (Sept.) 1925

Experimental Studies on Trendelenburg's Sign. T. Hühne.—p. 1.
Indications for Local Anesthesia. W. Schaack.—p. 9.
*Local Anesthesia and the Blood Pressure. L. A. Andrejew.—p. 21.
Anatomy of the Phrenic Nerve. Kutamanoff.—p. 29. Comment. Felix. —p. 44.
*Treatment of Furuncle on the Face. R. Morian.—p. 45.
Roentgen Treatment of Malignancies. H. Chaoul.—p. 59.
Cancers in Young Persons. Uhlhorn.—p. 72.
Primary Multiplicity of Tumors. L. Duschl.—p. 77.
Rare Type of Mammary Cancer. E. Sattler.—p. 98.
Decortication of the Lung in Empyema. F. Caesar.—p. 107.
Plastic Reconstruction of the Esophagus. O. Riesenkampff.—p. 116.
Embolism of the Femoral Artery, Following Resection of the Stomach. F. Hesse.—p. 120.
Indirect Fractures of Long Bones. Esau.—p. 127.
Fractures of the Hand Bones. H. Schum.—p. 132.
The Neurinoma Question. Esau.—p. 140.

The Blood Pressure During Local Anesthesia.—Andrejew ascribes to the emotional condition the drop in blood pressure often observed just before an operation, but the lowering of the blood pressure during the operation is due to the operative trauma and the length of the operation. The more sensitive the tissues or the organs, the lower the pressure will drop. Even after the operation, the blood pressure may be low or drop, but this speedily returns to normal as a rule. His research on fifty women and thirty-four men during operations under local anesthesia demonstrated the value of supervising the blood pressure during the operation as it is possible by this means to detect the first sign of impending collapse or shock, and ward it off in time. He suggests the advisability of supplementing the local anesthesia with a few whiffs of ether at the moment of the greatest injury of the tissues when it is not absolutely certain that all the centripetal nerve tracts have been blocked.

Furuncle on the Face.—Morian asserts that the malignant furuncle with sepsis from the start is doomed, whatever treatment is applied. In the 103 cases of furuncles on the face in Payr's service, 1913-1924, 10.7 per cent. were of this fatal type. The others all healed under conservative measures, salve, protecting bandage and fluid food. The results were equally good in former years under incision, but no better, and the disfigurement is less.

Jahrbuch für Kinderheilkunde, Berlin

110: 1-128 (Sept.) 1925

*Surgical Treatment of Otitis. G. Brühl.—p. 1.
*Genuine Nephrosis and Idiopathic Edema. G. Fanconi.—p. 12.
"Pathogenesis of Rickets." E. Freudenberg and P. György.—p. 21.
*Treatment of Typhoid with Caronia's Vaccine. A. Tüdős.—p. 24.
The p_H of the Blood in Atrophic and Dyspeptic Infants. Z. v. Bókay. —p. 36.
Treatment of Pyelocystitis with an Autovaccine. Z. v. Bókay.—p. 40.
Pyelocystitis in Children. S. Went.—p. 52.
*Desiccated Milk for Infants. J. Schoedel.—p. 58.
"Goat's Milk Anemia." Ockel.—p. 62. Reply. Opitz.—p. 68.

Surgical Treatment of Otitis.—Brühl discusses the treatment of acute otitis media in children. A paracentesis should be made without much hesitation. Antrotomy is frequently necessary (grave symptoms, protracted suppuration) but it should not be done unnecessarily. A radical operation should be performed in a child only for a vital indication.

Genuine Nephrosis and Idiopathic Edema. — Fanconi observed recovery from genuine nephrosis with extensive edema in a child after pneumococcus peritonitis. He suggests vaccine treatment. The child's blood contained less chlorids during the edematous stage than later.

Treatment of Typhoid with Caronia's Vaccine.—Tüdös reports good results with the use of this vaccine. It consists of typhoid cultures dissolved by serum from typhoid patients and sterilized by phenol.

Desiccated Milk for Infants.—Schoedel considers dried milk superior to condensed milk. Yet it should not be used for children for more than one to three months, and should not be older than 2 or 3 months. It may be preferable to unsafe fresh milk in summer and while traveling. Other food containing a sufficient quantity of vitamins should be added.

Klinische Wochenschrift, Berlin

4: 1753-1800 (Sept. 10) 1925

The Regulation of the Cardiac Function. C. J. Rothberger.—p. 1753.
Local Circulatory Disturbances. B. Fischer.—p. 1758.
*Vaccination Against Tuberculosis. H. Dold.—p. 1763.
The Dosage in Inhalation Therapy. H. Schäffer.—p. 1765.
Insulin Treatment of Diabetes. A. Wagner.—p. 1767.
Arsphenamin in the Malaria Treatment of Paralysis. B. Dattner.— p. 1771.
*Insulin Hypoglycemia and Phosphates. J. Abelin and E. Goldener.— p. 1777.
A Hormone of the Frog Heart. L. Haberlandt.—p. 1778.
Heterogenetic Antigens in Erythrocytes. Friede and Grünbaum.—p. 1778.
Local Anesthesia. F. Rost.—p. 1779.

Experimental Vaccination Against Tuberculosis.—Dold tested the immunity of guinea-pigs immunized according to Langer's method (heat-killed tubercle bacilli), and according to Seiffert's method (defatted bacilli). He found that these "immunized" animals were no more resistant to a tuberculous infection than normal guinea-pigs.

Phosphates in Insulin Hypoglycemia.—Abelin and Goldener found that the oral administration of phosphates prevented or greatly diminished the hypoglycemia caused by insulin injection into normal animals.

4: 1801-1848 (Sept. 17) 1925

Pathology of the Brain and Psychiatry. E. Leyser.—p. 1801.
*Vibration of Diseased Heart. R. Kaufmann.—p. 1803.
*The p_H of Stomach Contents. H. Kalk and B. Kugelmann.—p. 1806.
*Serum Sickness and Tetany. R. Hopmann.—p. 1810.
*The Predisposition and the Incubation Period. H. Abels.—p. 1814.
Weak Roentgen Irradiation. F. Heimann.—p. 1815.
Heavy Metals in Treatment of Diabetes. E. Schilling and R. Arnold. —p. 1818.
*Extraction of Cataract. E. P. Braunstein.—p. 1821.
Sulphur Injections in Chronic Encephalitis. S. Adam.—p. 1822.
Insulin and Spasmophilia. H. Baar.—p. 1822.
*Antagonism of Insulin and Epinephrin. E. Boden and F. Wankell.— p. 1823.
*Incubation Period in Passive Anaphylaxis. E. Friedberger and S. Seidenberg.—p. 1823.
*Spasmodic Yelling in Parkinsonism. J. Schuster.—p. 1824.
Orbital Complications of Sinus Infections. A. Esch.—p. 1826.
Immunization Against Tumors. N. Waterman.—p. 1829.

Vibration of Diseased Heart.—Kaufmann draws attention to a vibration of the heart which may be felt with the lightly applied hand. It indicates a bad prognosis, especially in patients with angina pectoris. It may be transitory in exophthalmic goiter and in acute endocarditis.

The p_H of the Stomach Contents.—Kalk and Kugelmann had practically identical results with dimethylamido-azobenzol titration and the estimation of the hydrogen ions in the gastric contents. Both methods should be used only when a test meal containing much proteins has been given, or when there is much blood, mucus or lactic acid present.

Serum Sickness and Tetany.—Hopmann observed a case of tetany and another case of a spasmophilic tendency in the incubation period of serum sickness. The alkalosis changed into acidosis during the eruption of the urticarial rash.

The Predisposition and the Incubation Period.—Abels reviews the facts which speak for a regular prolongation of the incubation period whenever the relation between the virus and the organism is shifted in favor of the organism. This applies especially to measles.

Extraction of Cataract.—Braunstein removes the senile cataract without iridectomy after dilating the pupil by an injection of epinephrin under the conjunctiva.

Antagonism of Insulin and Epinephrin. — Boden and Wankell noted an apparent antagonism of the action of insulin

and epinephrin on isolated intestine. Both preparations seem to have a constricting action on the Laeven-Trendelenburg frog preparation.

Incubation Period in Passive Anaphylaxis.—Friedberger and Seidenberg obtained an immediate passive sensitization of guinea-pigs by an injection of the serum of sensitized animals of the same species. The incubation period after passive sensitization with serum from rabbits is due merely to the nonspecific inhibiting action of the foreign serum.

Spasmodic Yelling in Parkinsonism.—Schuster's patient suffered from daily attacks of spasmodic yelling due to previous encephalitis. The attacks stopped after lumbar puncture and filling of the ventricles of the brain with air.

Medizinische Klinik, Berlin

21: 1409-1444 (Sept. 18) 1925

Diagnostic Value of Reflexes. R. Henneberg.—p. 1409.
*Iodin Treatment of Hyperthyroidism. Biedl and Redisch.—p. 1413. C'cn.
Economic Medical Treatment of Liver and Gallbladder Disease. T. Brugsch.—p. 1416.
Thrombopenic Purpura in Sepsis. F. Reiche.—p. 1418.
*Pyloric Ulcers. T. Bársony.—p. 1420.
*Tuberculosis of Infants and Congenital Syphilis. B. Epstein.—p. 1421. C'cn.
Hereditary Tremor. A. Roseno.—p. 1424.
*Congenital Dislocation of Hip Joint. H. Hilgenreiner.—p. 1425. C'cn.
Charcoal in Idiosyncrasy Against Morphin. S. Rechnitzer.—p. 1429.
Tubercle Bacilli in Cerebrospinal Fluid. P. Wichels.—p. 1430.
Cancer and Its Treatment. O. Strauss.—p. 1432. C'td.
The Rockefeller Institute and Its Research on Filtrable Viruses. W. Levinthal.—p. 1441.

Iodin Treatment of Hyperthyroidism.—Biedl and Redisch confirm good results of administration of iodin only in the typical cases of exophthalmic goiter. Hyperthyroid symptoms occurring in patients with a goiter of long standing did not improve.

Pyloric Ulcers.—Bársony points out that the majority of alleged pyloric ulcers are situated in the duodenum. Consequently the mechanical lesions due to the pressure of the gastric contents at this narrowest point of passage cannot have much pathogenetic influence in the origin of ulcers.

Tuberculous Infants and Congenital Syphilis.—Epstein observed among 11,600 infants nine cases of tuberculosis complicating congenital syphilis. He had the impression that the tuberculosis infection was rather milder in these infants.

Early Diagnosis and Treatment of Congenital Dislocation of the Hip Joint.—Hilgenreiner requires an early diagnosis and treatment. He has designed a splint which is applied only to the extensor surface of the thighs, and keeps clean, therefore, even in infants. It is light, and allows free access to the region of the joint.

Münchener medizinische Wochenschrift, Munich

72: 1585-1624 (Sept. 18) 1925

*Rickets and Irradiation of Cholesterol. H. Beumer.—p. 1585.
Roentgen-Ray Diagnosis in Pylorospasm. Heile.—p. 1586.
*Cure or Seeming Cure of Choked Disk. L. Heine.—p. 1588.
*Fat Embolism in Eye. F. Bernhard.—p. 1590.
Foreign Body in Abdomen. E. König.—p. 1590.
Treatment of Tuberculosis with Inhalation of Dust. A. Kühn.—p. 1591.
*Culture of Tubercle Bacilli. K. L. Pesch and Simchowitz.—p. 1592.
Tyroglyphus as Human Parasite? C. Mirtl.—p. 1598.
Perforation of Gallstone Through the Navel. A. Ohly.—p. 1598.
Spontaneous Cure of Cancer of Stomach and Liver? H. Pollack.—p. 1600.
Colorimetric Micromethods. E. Becher and E. Herrmann.—p. 1601.
Microtest for Blood Sugar. E. Komm.—p. 1602.
Medicine in North America. L. Schönbauer.—p. 1603. C'td.
Centennial of N. Friedreich's Birth. H. Schröder.—p. 1605.
Treatment of Fractures. F. Lange.—p. 1605. C'tn.
The Future of Pediatricians. E. Liefmann.—p. 1608.
Treatment in Tuberculosis Sanatorium. J. Ritter.—p. 1609.

Rickets and Irradiation of Cholesterol.—Beumer irradiated cholesterol or its alcoholic solution with ultraviolet rays. He determined with the digitonin method the loss of cholesterol. It averaged 8.1 per cent. after two hours of irradiation and 9.5 per cent. after twenty hours.

Cure or Seeming Cure of Choked Disk.—Heine admits recovery only in two of his seventeen patients with choked disk in whom the symptom disappeared without decompressive trephining. The longer the time of observation after the alleged recovery, the less favorable are the statistics.

Fat Embolism in Eye.—Bernhard describes the ophthalmoscopic changes in a case of fat embolism. He claims that his is the first case observed intra vitam.

Culture of Tubercle Bacilli from the Sputum.—Pesch and Simchowitz had excellent results with the Löwenstein-Sumiyoshi method of cultivation of tubercle bacilli from the sputum. The culture was positive in three of nineteen cases with negative microscopic findings.

Wiener klinische Wochenschrift, Vienna

38: 1027-1050 (Sept. 17) 1925

Origin of Symptoms in Deficiency Disease. H. Abels.—p. 1027.
*Mouse Cancer and Fatigue. F. Mandl and F. Singer.—p. 1031.
Herpes Zoster and Latent Malaria. B. Coglievina.—p. 1034.
Cultivation of Tubercle Bacilli. M. Schattner.—p. 1035.
Percussion of the Apices. E. Ladeck.—p. 1039.
Pregnancy and Cancer of the Cervix. W. Weibel.—p. 1040.
The Latest Views on Treatment of Nephritis. J. Mannaberg. Supplement.—pp. 1-8.

Mouse Cancer and Fatigue.—Mandl and Singer produced by daily faradization fatigue in mice inoculated with cancer. The tumors grew more rapidly than in the controls. Injections of a protein-free extract from muscles of a faradized rat had a similar effect.

38: 1051-1074 (Sept. 24) 1925

*Surface Tension of Body Fluids. D. Adlersberg.—p. 1051.
Shock Treatment. K. Hajós.—p. 1055.
Foreign Bodies in the Lungs. W. Schmid-Sachsenstamm.—p. 1056.
*Pathogenesis of Melena of the New-Born. H. Högler.—p. 1059.
*Administration of Testis Extracts. O. Zoth.—p. 1062.
*Alkali Treatment of Gastric and Duodenal Ulcers. O. Porges.—p. 1066.
Nursing in Austria. H. Sternberg.—p. 1068.
Therapeutic Use of Hebra's Water Bed. L. Arzt. Supplement.—pp. 1-16.

Surface Tension of Body Fluids.—Adlersberg determined with his associates the surface tension of single fractions of urine and found the curves instructive. There are large variations in health, usually in the opposite sense to the specific gravity. Disease of the liver causes a low level of the surface tension and less variations (isostalaguria). Exophthalmic goiter is also associated with a low surface tension of the urine. Cachectic cancer and tuberculosis patients had a low surface tension of the serum—similar to that encountered in diseases of the liver. Blood diseases showed high figures—perhaps due to the low cholesterol content of the blood. Extremely acid stomach contents showed a high surface tension. Admixture of bile lowered it considerably.

Pathogenesis of Melena of the New-Born.—Högler reports on fifty-nine cases of melena among 31,500 childbirths. Erosions or ulcers of the gastro-intestinal tract were found in the five infants who died from it. He confirms Raisz' observation on occult bleeding in about one half of otherwise normal new-born infants. The cause of the melena may be the change in the circulation of the fetus, and perhaps the toxic products accumulating in a prolonged labor: delivery had been difficult in fourteen of his cases. Gelatin, injections of horse serum or of the mother's serum, and especially roentgen-ray irradiation of the spleen are recommended.

Administration of Testis Extracts.—Zoth believes that the only rational way of testing the efficiency of any method endeavoring to prevent senility is to start using it before old age sets in. Every summer for the last thirty years (since he was 30) he has been taking a series of injections of a testis extract prepared by Brown-Séquard's technic. The intervals between the courses should be at least nine months, he says, if one wants to avoid disturbances of the heart. He is inclined to attribute his muscular efficiency and easy recovery from various infections to this treatment. He is unable to assert any striking result in the sexual sphere. He recommends the same prolonged experiment to others in order to find out if his impression of a delayed senility is correct.

Alkali Treatment of Gastric and Duodenal Ulcers.—Porges had devised independently of Sippy a similar method. He uses, however, only calcium carbonate and magnesium oxid. He objects to sodium bicarbonate because it may produce a transitory alkaline reaction in the stomach, as well as too high an osmotic pressure if taken with too little water. The calcium and magnesium are taken separately. The latter

serves chiefly to prevent constipation. Therefore he advises to take it once or twice a day, and more often if there is constipation. Usually the patient is advised to take a heaped teaspoonful of one or the other powder every two hours, in grave cases every hour. He does not need to stay in bed or restrict his diet much except with hemorrhages. All other patients may work and avoid only strong spices, strong liquor, fresh bread and too cold drinks. Persistence of subjective disturbances in spite of the treatment speaks against uncomplicated ulcers.

Zentralblatt für Chirurgie, Leipzig

52: 2113-2160 (Sept. 19) 1925

Indications for Rectotomy for Cancer. F. Mandl.—p. 2114.
Morphin by the Vein in Tabetic Crises, etc. F. Manhenke.—p. 2118.
Needle for Infusion. O. Ansinn.—p. 2119.
*Gangrene of Transverse Colon. A. Dzialoswynski.—p. 2120.
Calculi in the Appendix. O. Wassertrüdinger.—p. 2123.

Gangrene of Transverse Colon.—Dzialoswynski reports what he thinks is the first instance on record of recovery after resection of the entire gangrenous transverse colon. It had been preceded by four operations for peptic ulcer and their sequels, and three months were required to get the stumps of the bowel near enough together to suture the ileum to the descending colon.

52: 2161-2224 (Sept. 26) 1925

*Hygiene of the Operating Room. M. Kirschner.—p. 2162.
*Psoas Pain in Spondylitis. A. Gregory.—p. 2165.
Recuperation of Innervation in Skin Transplants. X. Polissadowa.—p. 2166.
Recurrence of Ulcer After Billroth I. R. Stohr.—p. 2168.
Properitoneal Hernia. H. Heinlein.—p. 2172.
A Cylinder Saw. A. Nussbaum.—p. 2176.
*Emergency Disinfection. Haas.—p. 2178.

Hygiene of the Operating Room.—Kirschner thinks that the surgeon and his aides suffer from too long standing, too much glare in the operating rooms, and from the overheating. He suggests that the surgeon might sit for certain interventions or certain phases of his activity. The white uniforms add to the glare, and the absence of shadows is a distinct drawback which might be prevented by having the light on a portable stand that could be moved around the room. The overheating and inhalation of anesthetic fumes he combats with small electric fans arranged to play on the operating personnel and the air above the table and at the washstands.

Pain in the Psoas with Spondylitis.—Gregory has noted that tenderness of the psoas may be the first manifestation of spondylitis. This is particularly likely in adults. The stiff attitude and the pains in the back or leg may be mistaken for lumbago or sciatica but palpation of the psoas will correct the diagnosis. The pain on pressure of the psoas spreads down the leg on that side. The most tender point is where the psoas passes the brim of the pelvis. In one of two cases described, the spinous processes were not tender to explain the pains in the back and left leg. Pain on deep palpation and pressure to the left of the spinous process of the first lumbar vertebra and pain on deep gliding pressure of the left psoas confirmed the diagnosis of spondylitis. Eighteen months later a gravity abscess in the left thigh, with sequesters, was cleared out, and in six months the man was clinically cured. There had been no curvature at any time.

Emergency Disinfection Without Gas, Fire or Hot Water.—Haas used three pans of alcohol. In one he placed sheets and towels, in the second his instruments, and the third he used for his hands. By this means he saved three women in grave eclampsia, all recovering smoothly after the cesarean section or decapsulation of the kidneys in the remote farmhouse.

Zentralblatt für Gynäkologie, Leipzig

49: 2049-2112 (Sept. 12) 1925

Increasing Virulence of Micro-Organisms. A. Reist.—p. 2050.
Medicinal Aids in Delivery. A. Calmann.—p. 2057.
*Evidence for Pregnancies of Subnormal Duration. Rissmann.—p. 2060.
Tubal Pregnancy or Perforation of the Uterus. K. Herold.—p. 2062.
Toxic Psychopathic Conditions in Pregnancy. S. A. Selitzky.—p. 2070.
Thyroid Treatment of Temporary Edema in the New-Born. Waltner.—p. 2073.

Evidence for Pregnancies of Subnormal Duration.—Rissmann emphasizes the medicolegal importance of this subject, and the undependability of the guiding points hitherto listed. He says that a fully developed child born from a pregnancy of 229 or 230 days has not been authentically established to date, as the methods of measurement and calculation are faulty. He urges the German Gynecologic Society to take the initiative in correcting the present lack of authoritative criteria.

49: 2113-2176 (Sept. 19) 1925

Starvation Treatment for Vomiting of Pregnancy. Determann.—p. 2117.
Halban's "Metastatic Hystero-Adenosis." R. Meyer.—p. 2121.
*Blood Cholesterol and Jaundice in the New-Born. R. Hornung.—p. 2124.
Mercuric Chlorid Poisoning Through the Vagina. Holtermann.—p. 2133.
"Specific Constituents of Ergot." E. Rothlin.—p. 2137.
"Retention of Placenta Due to Myoma." O. Nebesky.—p. 2138.
*Treatment of Tears of the Cervix. H. Baumm.—p. 2141.
*Early Diagnosis of Pregnancy. A. Timofeew.—p. 2143.

Blood Cholesterol and Jaundice in the New-Born.—Hornung found in the new-born, with Simmel's method, an increased osmotic resistance of the erythrocytes. This was especially pronounced in jaundice. He believes that this testifies against a hemolytic origin of the jaundice. The blood cholesterol was low in almost every new-born child, and remained low longer in the infants with jaundice than in the others.

Treatment of Tears of the Cervix.—Baumm did not find a single instance of a profusely bleeding laceration of the cervix among 7,551 cases of spontaneous delivery. A slight tear does not need to be sutured and large tears should be sutured only in the clinic, except when Henkel's compression of the parametria is used.

Early Diagnosis of Pregnancy.—Timofeew applied Dienst's method (estimation of antithrombin) with good results: Negative findings excluded pregnancy with 90 per cent. of probability.

Časopis lékařů českých, Prague

64: 1321-1356 (Sept. 12) 1925

*Chronic Nephritis with Tuberculosis of Suprarenals. Ortynský.—p. 1321.
Periarterial Sympathectomy. E. Polák.—p. 1328.
Actinomycosis of Tongue. V. Hlaváček.—p. 1335.
Cause of Death of Composer Smetana. A. Heveroch.—p. 1338.

Chronic Nephritis with Tuberculosis of Suprarenals.—Ortynský describes a case of chronic nephritis associated with an extensive destruction of the suprarenals by tuberculosis, and with tuberculosis of the genito-urinary apparatus. The heart was not enlarged, the systolic pressure only 155 mm. mercury, and the pigmentation slight. He points to Bauer's theory on the change of retained nitrogenous products into epinephrin. He obtained a positive Meirowski reaction (pigmentation) with pieces of skin from patients with contracted kidneys. The reaction was negative in lipoid nephrosis.

Prophylaktitcheskaia Medicina, Kharkov

4: 1-192 (Aug.) 1925. Partial Index

*Action of Alkaloids on Antibody Production. P. Butiagin.—p. 11.

Influence of Drugs on Formation of Agglutinins.—Butiagin, who made his experiments on rabbits with various alkaloids, says that he is not aware of any previous experiments in this line with eserin, cocain or pituitary extract. He used a typhoid bacillus culture for the antigen. Repeated injections of pilocarpin and antigen increased the formation of agglutinins by five or sixfold. Eserin, atropin and pituitary extract appeared to be without effect. Morphin inhibited the formation of agglutinins; as also repeated injections of epinephrin. With cocain, the amount of agglutinins was augmented twelve or fifteenfold.

Russkaia Klinika, Moscow

3: 483-672 (April) 1925. Partial Index

*Leukocytosis in Man and Dog. A. Voronoff and J. Riskin.—p. 483.
*The Leukocyte Picture in Various Diseases. N. Zolotareva.—p. 513.
Drug Treatment of Apepsia. V. Vinogradoff et al.—p. 526.
Palpation of Gastro-Intestinal Tract. J. Flekel.—p. 556.
Case of Tabetic Vertebral Osteo-Arthropathy. A. Prokin.—p. 602.
*Carcinoid of the Appendix. V. Prebsting.—p. 606.
Improved Plastic Technic for Correction of Prolapse of Uterus. N. Markoff.—p. 620.

Digestive Leukocytosis as a Conditional Reflex.—Voronoff and Riskin's research was made on five healthy men and ten dogs during fasting and absolute rest. The number of leuko-

cytes varied during the day, the changes being different in different persons. The number increased at the usual meal hour, thus showing a "habitual" leukocytosis. An exaggerated leukocytosis appeared in dogs under certain external stimuli associated with sham feeding. This leukocytosis was thus proved to be the result of a conditional reflex. The alleged digestive leukocytosis is evidently not a constant reaction from absorption of products of digestion and secretion, but is a conditional reflex reaction, in this same way.

The Leukocyte Picture in Different Affections.—Zolotareva made 610 examinations of blood from 406 patients, using Schilling's simplification of the Arneth classification, and records the findings.

Four Cases of Carcinoid of the Appendix.—Prebsting describes four cases in patients, aged from 17 to 34. On microscopic examination the tumors showed glandlike formations, confirming the embryonal origin of carcinoid, and the connection with the entodermal epithelium of Lieberkühn's glands.

Nederlandsch Maandschr. v. Geneesk., Amsterdam

13: 141-247, 1925

*The Bacteriophage in Children's Pyelitis. F. N. Sickenga.—p. 141.

The Bacteriophage in Children's Pyelitis.—Sickenga found a bacteriophage constantly in the urine in four of twenty-six cases of colon bacillus pyelitis in children from 5 weeks to 3½ years old. The bacteriophage was found occasionally in twelve others, but not at all in ten others. The course of the pyelitis did not seem to be modified by the presence or absence of the bacteriophage, and none was ever found in urine or feces that was strong enough for complete lysis of the corresponding bacillus in bouillon culture. An autogenous vaccine had little if any influence on the bacteriophage findings, but the presence of the bacteriophage seemed to detract from the action of the vaccine. Sodium citrate was the only drug that seemed to modify the course of the disease, and this only in the acute phase. The article is a complete study of the subject, with illustrations.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

2: 1085-1192 (Sept. 5) 1925

*Bacteriophage Action in Blood. L. K. Wolff.—p. 1088.
*Monosymptomatic Pains in the Legs. Wortman.—p. 1091.
Estimating the Sugar Content of Blood. Cohen Tervaert.—p. 1110.
Miliary Tuberculosis of Lungs: Recovery H. van Wely.—p. 1113.
Is Gastrophilus Responsible for Creeping Disease? W. F. Schaefer.—p. 1115.
History of Treatment of the Sick by Churchmen. A. J. van der Weijde.—p. 1118.
Folklore Treatment of Enuresis. C. Bakker.—p. 1123.
Hippocrates' Visit to Democritus. J. B. van Gils.—p. 1132.

Bacteriophage in Blood.—Wolff's research has demonstrated that addition of blood or serum to bacteriophage cultures does not impede the bacteriophage action.

Monosymptomatic Intense Pains in the Legs.—In two of Wortman's three cases, the pains in the legs were finally traced to a tumor in the pituitary or spinal cord. The pains in the third case suggested acute polyarticular rheumatism except the onset with chills, the involvement of three large joints with the connected muscles, the continuous fever, and the lack of benefit from the salicylates. The assumption, by exclusion, of the gonococcal nature of the acute infection was confirmed by discovery that the husband had recently been operated on for urethral stenosis. The operation may have roused latent gonococci to virulence. Anything in the line of an acute articular affection in women should suggest the gonococcus unless definitely explained otherwise.

Finska Läkaresällskapets Handlingar, Helsingfors

67: 691-761 (Aug.) 1925

*Cytology of Pyuria. F. Stenius.—p. 691.
Operative Invagination Cases. G. Snellman.—p. 711.
Movement of Endolymph in Semicircular Canals. F. Leiri.—p. 729.
Tuberculosis in the Curriculum. A. v. Bonsdorff.—p. 734.

Differential Diagnosis of Pyuria.—Stenius confirmed on fifty patients the dependability of Colombino's sign of tuberculosis, namely, the characteristic irregular outlines of the leukocytes in the sediment. Nearly all the leukocytes were thus deformed in all the twenty-two pure tuberculous cases, while they were smoothly round in twenty-two streptococcus, staphylococcus or colon bacillus cases. The cytology of the urine thus throws light on the etiology.

Hospitalstidende, Copenhagen

68: 721-744 (Aug. 6) 1925

*Microtest for Protein in Serum. S. Holm and H. Tómasson.—p. 721.
*Pathogenesis of Myopia. E. Holm.—p. 729.

Microtest for Protein in Serum.—Holm and Tómasson dilute 0.1 c.c. of serum with Ringer's solution, and pipet nitric acid to the bottom of the glass. A white precipitate at the line of junction always paralleled positive findings with other tests. By varying the dilution, it is possible to estimate the protein content quantitatively. In twenty-three normal persons the average range was from 5.55 to 8.77 per cent.

Etiology of Myopia.—Holm ascribes to the effort for accommodation in near reading, during the period of active growth, the development of myopia in persons congenitally predisposed as a recessive hereditary condition. Myopia is common among printers, he has noticed, while it is rare in watchmakers. Printers have to do a great deal of reading while watchmakers use a magnifying glass for their work. They thus are saved the strain of accommodation, although their work requires much bending over, while printers' copy is placed high before them.

Hygiea, Stockholm

87: 657-688 (Sept. 15) 1925

*Total Heart Block with Full Earning Capacity. E. Zander.—p. 657.
*Myeloma with Uremia. B. Frykberg.—p. 667. Begun, p. 618.

Unimpaired Earning Capacity with Total Heart Block.—Zander examined this patient first, as a boy, aged 7. His bradycardia had attracted attention and the heart block was total. At 20, the young man had passed through several infectious diseases, but the general condition had kept constantly good, and Zander does not regard the prognosis as grave. There is no progressive tendency, and the heart seems able to cope with any strain. This was tested with graduated exertion.

Case of Myeloma with Uremia.—Frykberg's patient was a man, aged 69, who twenty-two years before had been successfully treated for chronic nephritis. With regulation of the diet the urine was kept free from sugar and albumin until 1924, when symptoms of nephrosis with uremia developed accompanying symptoms explained by a myeloma in the first lumbar vertebra. Bence-Jones albumin was present in the urine, with anemia of a special type: 1,600,000 erythrocytes and hemoglobin 32 per cent.; 48 per cent. neutrophil leukocytes; 37 per cent. small lymphocytes, and from 4 to 6 per cent. myelocytes—the total leukocyte figure being 4,500 to 8,600. The kidneys showed proliferation of connective tissue and hyaline glomeruli. The multiple myeloma had invaded ribs, kidneys and liver as well as the spine. The case seems to confirm the formation of Bence-Jones albumin in the kidneys, and that the process is of the nephrosis type. The kidneys react in a specific manner to the specific toxin.

Upsala Läkareförenings Förhandlingar, Upsala

30: 319-480 (Sept. 16) 1925

*Human Thoracopagic Monsters. F. Ysander.—p. 319.
*The Endocrine System in the Human Fetus. J. A. Hammar.—p. 375.

Thoracopagic Monsters.—Ysander's study of human diploterata is devoted to the thoracopagic type and is profusely illustrated, with eleven double plates. The youngest of the seven specimens examined measured only 14 mm.; most of the cases published to date have been full term deliveries. The article is in English. The importance of teratology for the study of embryology in general is emphasized.

The Endocrine System from Embryologic Standpoint.—Hammar discusses the question as to when the first signs of endocrine activity become apparent in the fetus. The article is in French, with twenty photomicrographs.